THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 5714 LONDON, SATURDAY, MARCH 4, 1933 CCXXIV

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ADDRESSES AND ORIGINAL ARTICLES

THORACIC SURGERY

By H. Morriston Davies, M.D., M.Chir. Camb., F.R.C.S. Eng.

MEDICAL SUPERINTENDENT, VALE OF CLWYD SANATORIUM; CONSULTING SURGEON TO UNIVERSITY COLLEGE HOSPITAL, KING EDWARD VII. WELSH NATIONAL MEMORIAL ASSOCIATION, LANCASHIRE COUNTY SANATORIUMS, AND CHESHIRE JOINT SANATORIUM

LECTURE I*

THE two lungs are completely separated from each other by the mediastinum; the two pleural cavities are independent. But when the question of surgical intervention arises, the two halves of the thorax cannot be considered individually. The effect or the complications of disease on the one side may materially influence the physiological state of the opposite lung; treatment of the one side may so embarrass the other that death ensues. The crux of the whole situation is the mediastinum and, to a lesser extent, the heart.

The mediastinum is not a rigid vertical partition; it must be regarded rather as a veil, comparatively taut in some people but surprisingly lax in others. Disease which causes thickening of the pleura will stiffen and even immobilise the mediastinum. Except under these pathological conditions, it is a mobile structure, but so balanced by the perfect elasticity of the lungs on either side that it is, in health, practically devoid of movement. Deprived, however, by disease of this equipoise, it loses its apparent stability and yields to every displacing force, being either pushed away or drawn towards the affected side, carrying with it, among other structures, the heart.

Displacement of the Mediastinum

The heart is extremely tolerant of certain movements, but most intolerant of others. A slow progressive displacement up to an inch, or even more, produces no disturbance recognisable either by clinical or electrocardiographic examination. A rapid displacement is not well tolerated, but as such change is associated usually with a rapid diminution of lung volume, it is difficult to assess to the heart displacement and to the diminished lung volume their correct responsibility in the production of change in the rate and quality of the pulse and in the dyspnœa.

A mediastinum and heart which have been deprived of their normal balance and have become displaced will show some recovery towards the normal position during inspiration, but an increased displacement on expiration. The to-and-fro movement is slight during quiet respiration, but becomes greatly increased with deep respirations. Provided no especial call is made for deep breathing, this slight though constant to-and-fro movement is of little consequence so long as the thoracic walls are rigid and complete. Once, however, an opening is made through the chest wall or the wall itself is made mobile by resection of lengths of rib, the mediastinum and heart may flap constantly to-and-fro with every respiration. This, together with the associated disturbances of the normal physiological condition, produces a state of affairs which, if unchecked, has a rapidly disastrous ending.

Changes in the position of the mediastinum in a closed chest cannot take place without alterations of the lung volume. Pathological conditions, such as an effusion or a pneumothorax, produce a positive intrapleural pressure, and take up space in the hemithorax. This necessitates a partial collapse of the lung on the same side, a displacement of the mediastinum towards the sound side, and, of necessity, therefore, a diminution in the volume of the opposite lung also. If the volume of the lung on the affected side is diminished rapidly, as with massive collapse, and, to a slight extent, with pneumonia, the mediastinum is drawn across to that side, and the opposite lung must expand to fill up the enlarged hemithorax. Such increase in size, when produced acutely, is partly by dilatation of the alveoli, but partly by increased engorgement of the vessels and by œdema. This doubtless contributes to the breathlessness seen in massive collapse. The mediastinal displacement associated with chronic fibroid contraction of one lung is of such gradual onset that the contralateral lung can compensate by a pure emphysema. In such cases, moreover, the mediastinum resists the drag, being to a great extent fixed by the thickened and adherent pleural membranes.

These changes in the position of the mediastinum, if of slow onset, can be, and often are, symptomless, but, if abrupt, are always accompanied by symptoms. Reference has already been made to the cardiac manifestations and to the dyspnœa; especial reference must be made to one other symptom, pain. The mediastinum has its fascial attachments front and back. The lungs are attached to it by their roots. In addition, it is surrounded by the parietal pleura, which has certain pouch-like protrusions which reach up to or across the midline. These incursions doubtless account for the mobility of the mediastinum, and also for its fixation when there has been intrapleural inflammation. Displacement of the mediastinum cannot occur without dragging on its attachments to the surrounding structures, including the parietal pleura. This drag affects equally the attachments both to the right and left, irrespective to which side the displacement is. In a case with unilateral disease in which the mediastinum is either drawn over to the affected or displaced to the opposite side, pain may, therefore, occur in the interscapular or parasternal regions on the sound side, thus causing anxiety as to the possibility of extension of disease to that side.

The most important of the pleural reflections in relation to the mediastinum is the approximation of the membranes of either side, in front of the mediastinum, and behind the sternum from the first to the third rib. To the anatomist there is no particular asymmetry at this point, but to those who practise artificial pneumothorax the comparative frequency of a hernial protrusion of the left sac to the right, and the rarity of a similar protrusion of the right sac to the left is very striking. Another important deviation is of the right pleural sac behind the mediastinum, including the heart and œsophagus, in front of the bodies of the eighth and ninth dorsal vertebræ—the vertebro-mediastinal pleural sinus.

These pleural reflections, when the pleural cavity is filled with an effusion or air, may become stretched and form herniæ, which bulge across the middle line and encroach on the opposite lung. This herniation is always combined with displacement of the mediastinum and the two combined cause a considerable reduction, especially during expiration, in the volume of the contralateral lung on which the patient depends

* The first George Haliburton Hume lecture for 1933, delivered before the Newcastle-upon-Tyne and Northern Counties Medical Society on Feb. 2nd. The second lecture will appear in a forthcoming issue of THE LANCET.

for aeration. This herniation may occur with a negative as well as with a positive intrapleural pressure.

In the presence of an effusion there is yet another mechanical difficulty which will be encountered. This is the deposit of the cellular and fibrinous content of the fluid on the diaphragmatic pleura and into the phrenico-costal sinus. This becomes organised, fixing the diaphragm, the base of the lung, and the lower part of the chest. It is also responsible for the formation of adhesions between the pericardium and the base of the lung, which interfere with the free action of the heart, causing dyspnœa, tachycardia, and an irregular pulse. The deposit on and the irritation of the parietal pleura cause gradual thickening of the membrane and impede the re-expansion of the lung, should that later be required.

When trauma or disease is responsible for a spontaneous pneumothorax, or an effusion in the pleural cavity, the most frequent indication for surgical intervention is the mechanical disturbance produced by either of these complications; intervention is much more rarely necessitated by infection. In other words, when dealing with a pneumothorax a serous effusion, or with the great majority of tuberculous effusions, the only indication for active treatment is the excessive displacement of the mediastinum. When intervention is necessary on account of empyema, one of the most important considerations regulating modern treatment is again the mediastinum.

Spontaneous Pneumothorax

The dangers of a spontaneous pneumothorax are embarrassment of respiration and infection. This latter is surprisingly rare. Embarrassment of respiration depends on the freedom of the lungs from adhesions, and on the size and character of the opening in the lung. Adhesions preventing the collapse of the lung limit the extent of the pneumothorax and prevent excessive displacement of the mediastinum and so of collapse of the opposite lung. This advantage is sometimes offset by the adhesion dragging on one side of the lung-opening and preventing it from closing. When this condition persists it is necessary to divide the adhesion.

In the absence of adhesions the pneumothorax results in progressive collapse of the lung. This is usually sufficient to occlude the opening, which then becomes sealed by lymph. Before, however, the opening is closed the pressure may have risen sufficiently to distress the patient owing to the displacement of the mediastinum and its consequent influence on the contralateral lung, thereby curtailing the respiratory capacity. It is occasionally only that the resultant dyspnœa is sufficient to necessitate aspiration of some of the air. Should this be advisable, however, only sufficient air must be aspirated to make the patient comfortable. The positive intrapleural pressure is reduced, but not converted to a negative pressure lest the tear in the lung be reopened.

The spontaneous pneumothorax with a valve-like opening which allows the escape of air from the lung into the pleural cavity but not in the reverse direction is an urgent menace to life. Death from suffocation may be a matter of minutes only. There may be no time for refinements in technique. The largest available needle must be thrust through an intercostal space into the pleural cavity. A hypodermic injection of morphine gr. ¼ can then be given. This will ward off the imminent danger and allow time for the insertion with all aseptic precautions of a needle connected with a pneumothorax apparatus. Air can now be drawn off and the intrapleural pressure controlled. It occasionally happens that the necessity for aspiration is constantly recurring, or that the opening having apparently closed reopens. It is then necessary to introduce a catheter into the pleural cavity and to institute air-tight drainage.† This has many advantages. Provided the catheter is securely fixed the patient can be left with safety, as the intrapleural pressure is automatically regulated. Every forceful expulsion of air into the pleural cavity escapes immediately; should an effusion develop this is drained; at the same time it permits of a slight negative pressure being kept in the pleural cavity, which helps the re-expansion of the lung. The disadvantage is that the lymph which will form and which is so desirable, as it is this which seals the lung opening, will clog the catheter from time to time. It is, however, possible to clear the catheter with a stilette or, alternatively, to change it.

Pleural Effusions

All non-progressive effusions should be left alone unless there is a definite reason for intervening. An exploratory puncture with a syringe and fine needle should always be made to confirm the presence of fluid, if in doubt, and to ascertain the character of it. This can be repeated with impunity as necessary. There are three indications for the removal of the fluid. The most frequent and the most important is the appearance of dyspnœa and tachycardia due to excessive displacement of the mediastinum. A second and later indication is the persistence of pyrexia due to absorption of toxins, almost certain evidence that the effusion is an acute tuberculous one or is infected with pyogenic organisms. The third indication is when, after two or three weeks, the effusion is still undiminished in size. It is often found that absorption can be started and will continue satisfactorily once the intrapleural pressure is reduced by aspirating a part of the fluid.

The reason why delayed absorption is an indication for aspiration is that most effusions have some cellular or fibrinous content which is deposited in the dependent parts of the thorax. Becoming organised it produces thickening of the membranes, and will eventually interfere with the re-expansion of the lung and produce adhesions between the pericardium, diaphragm, and lung.

When dealing with tuberculous effusions there is an additional reason against repeated aspirations. Such an effusion is at first usually clear with little solid content, but after two or three aspirations it becomes more opaque, due to an increase in cells and fibrin, and after a time may become so thick with fibrin that it cannot be withdrawn through an ordinary cannula unless predigested. A tuberculous empyema occurring in a case with unilateral disease, and which shows itself to be unresponsive to treatment by aspiration, should not be allowed to reach the state of chronicity with thick pus and with thickened rigid membranes. An extensive, multiple stage thoracoplasty should be done while the membranes are still capable of satisfactory collapse, and the patient's general health is yet sufficiently good to justify this major operation.

It is not justifiable to inflict unnecessary pain; it tends, among other things, to destroy the morale and the confidence of the patient. When repeated explorations or aspirations are necessary, the puncture

† This will be described later.

should be as painless as possible, lest the constant apprehension and anticipation further undermine the general health. Needles should not be inserted without anæsthetising the track with novocain. Aspiration of a large effusion without replacing the fluid by air is productive of pain, and this is the least of the risks to which the patient is exposed.

A small, recent effusion associated with little change in the lungs or pleural membranes is easily withdrawn. When an effusion has produced collapse of a lung, possibly extensively fibrosed, has caused a considerable displacement of the mediastinum, and led to a general thickening of the pleura, it is not possible to aspirate that fluid with impunity in a short space of time. The thickened membranes cannot stretch, and pain will result from the drag on the adhesions; the lung cannot re-expand to its old volume, and existing cavities will therefore be reopened; the mediastinum, previously pushed across to the opposite side, will be dragged over to the affected side; the contralateral lung will be forced to expand beyond its normal. A distressing cough, considerable pain, and possibly copious frothy sputum are the consequences of such an effort. In some cases, even, œdema and death may ensue. By replacing, by air or oxygen, part of the fluid as it is withdrawn these symptoms are all avoided. The effect of this replacement is to enable the maximum traction force to be applied on the lung and mediastinum which can be tolerated with comfort and safety. At the same time it is possible to aspirate as much of the fluid as is considered desirable. When the effusion conceals a malignant growth in the lower lobe, the advantage of being able to empty the pleural cavity of the fluid is obvious.

It is sometimes possible to disinfect an effusion which is loaded with tubercle bacilli, by injecting, after the aspiration, 5 or 10 c.cm. of a 2 per cent. solution of methylene-blue in absolute alcohol. If this fails, the effusion should be replaced by olive oil containing 5 per cent. oil of gomenol. This will be referred to later when considering oleothorax.

Airtight syphon drainage is indicated for those cases of tuberculous empyema in which the pus is too thick for aspiration, and in which a thoracoplasty is proposed; it is also indicated when there is considerable persistent toxæmia despite treatment as indicated above, and especially when there is a mixed infection.

We have already seen that with simple effusions the most important consideration is the effect of the fluid on the mediastinum; that with tuberculous pleurisies, the importance of the mediastinum has in no way faded, but a new factor has arisen, and the toxæmia may occasionally assume prime importance and necessitate intervention on its own account. When the empyema is a pyogenic one, the infection and the dangers associated with the mediastinum are of almost equally great importance, and disaster is likely to result if the fullest consideration is not given to both of them.

Empyema

The old line of treatment by thoracotomy in every case of empyema was associated with a heavy mortality. In streptococcal cases it was about 25 per cent., but during the influenza epidemic of 1917–18 it rose in some places in America to as high as 70 per cent. This led to the Empyema Commission being set up in America. As a result of their work and of that of Evarts Graham, a true appreciation of the physiology of the open pneumothorax was obtained. The immense value of this is shown by the drop in the mortality in cases of streptococcal empyema to 4·3 per cent.

If a large opening is made in the chest wall there are, in the absence of adhesions, certain inevitable changes. There is the collapse of the lung, which, except that it occurs suddenly, is, in itself, the least serious of the effects. The collapse of the lung is due to the substitution of the negative pressure, to which the lung is usually subject, by an atmospheric pressure. As the mediastinum is mobile, this yields to the pull of the negative pressure of the contralateral side, and to the force of the atmospheric pressure on the surface of the lung on the affected side. The displacement continues until the pressure in the contralateral hemithorax is approximately the same as that on the side of the open pneumothorax. In other words, the pressure in both sides of the chest becomes approximately equal, except at the height of inspiration. In order to get any air into the lung on the sound side, a very forceful inspiratory effort has to be made, since it is only at the height of inspiration that there is a negative pressure, and therefore a suction power capable of drawing air from the trachea into the lung.

During inspiration air will enter the lung through the glottis and trachea, and into the pleural cavity through the opening in the chest wall. Should the opening through the glottis be the larger a greater volume of air will be drawn into the lungs than through the opening into the pleural cavity. But if the pneumothorax opening is definitely larger than the glottis, the reverse is the case. The effort necessary for the increased inspiratory respirations is considerable. It is natural that the more seriously ill the patient, the greater the strain of the effort and the less the endurance capacity.

During expiration there is a partial expansion of the lung on the side of the open pneumothorax. The air which inflates this lung comes from the opposite lung, being driven out of it by the forceful expiratory action. During the inspiratory phase this air is drawn back again into the sound lung. This pendulum flow of air is immediately deprived of all its oxygen and is therefore valueless, and it occupies space, already greatly limited, which should be filled by air from the trachea.

There is furthermore a to-and-fro flapping of the mediastinum with each respiratory phase; inspiration draws it to the sound side while expiration forces it away again. This constant to-and-fro action causes serious cardiac embarrassment. Other difficulties are the loss of aspiration of the venous blood by the heart, leading to a venous stasis, and a loss of heat from the exposed pleural cavity. These dangers diminish and may almost cease to exist in proportion as the mediastinum is fixed by thickening of the pleural membranes, by the deposit of cellular debris and lymph, and by the formation of adhesions.

DIFFERENCE BETWEEN PNEUMOCOCCAL AND STREPTOCOCCAL EMPYEMA

The essential difference between a thoracotomy done for a streptococcal and a pneumococcal empyema in the earlier stages is that with a streptococcal infection it takes a considerable time for the mediastinum to become immobilised and, until that happens, thoracotomy means exposing a patient to all the dangers of an open pneumothorax. With a pneumococcal empyema, on the other hand, early fixation of the mediastinum is the rule.

A pneumonic empyema is a "meta-pneumonic" manifestation. That means to say that the pneumonic consolidation is usually over before the empyema is diagnosed. By this time resolution is taking place,

the rate of metabolism is diminishing, and the vital capacity is increasing. A streptococcal empyema, on the other hand, is "syn-pneumonic," developing with the very onset of the pneumonia. These two empyemas differ, moreover, in the character of their pus. The pus in a pneumococcic case is rich in fibrin from the start, and forms a deposit which thickens the pleural membranes and fixes the lung and mediastinum. The hæmolytic streptococcal case is very different. At first the effusion is a brown, turbid fluid, producing little deposit and unable, therefore, to immobilise the mediastinum. Frank pus does not appear till after two or three weeks.

Early thoracotomy and drainage is not particularly dangerous in a pneumococcal empyema, but it is intensely dangerous in the streptococcal case. Yet treatment is urgent, partly because of the acute toxæmia which demands immediate evacuation of the pus, and partly because of the symptoms caused by pressure on and displacement of the mediastinum.

The first step in every case of empyema is to ascertain by exploratory puncture the character of the effusion and the nature of the infection. If thick pneumococcal pus is found, thoracotomy and airtight drainage can be instituted, but if the empyema is due to a hæmolytic streptococcus, unless diagnosis has been long delayed and frank pus is present, thoracotomy is absolutely contraindicated, but other steps must be taken immediately to evacuate the fluid.

ASPIRATION AND AIRTIGHT DRAINAGE

The two essential principles in treatment, the removal of the fluid responsible for the profound toxæmia and the release of the pressure displacing the mediastinum and compressing the opposite lung, can both be carried out effectively by aspiration with replacement by oxygen or air. The difficulty is that the relief of symptoms is a temporary one only, and the process must be repeated every two or three days, as indicated by the return of pyrexia and the recurrence of symptoms of respiratory and cardiac embarrassment. Very occasionally, both in cases of streptococcal and pneumococcal empyemas, patients have been cured by aspiration alone.

Once pus has formed and has had time to cause a deposit which thickens the pleura, aspiration can be abandoned for thoracotomy. Even then, however, it is not wise to resect a rib and to institute open drainage. Syphon or suction drainage through an airtight opening is in most cases sufficient to evacuate the pus and re-expand the lung. In the earlier stages lavage is not indicated but may be after the acute phase has passed off. Lavage with Carrel Dakin's solution is necessary in certain cases where the deposit is so think that re-expansion of the lung is difficult. Carrel Dakin's solution has a solvent action on the fibrin in addition to its antiseptic value.

The great advantage about airtight drainage is the comparative simplicity of the operation. Two precautions are necessary. It is important to be sure that the catheter and the cannula are the same size, so that when the cannula has been withdrawn the catheter fits tightly in the tissues. It is advisable to mark the catheter at a point 3 inches from the end, before insertion, as a guide to the length projecting inside the pleural cavity. The catheter will become loose in the course of the ensuing seven to ten days and cease to function efficiently. Another difficulty is that the opening may get constantly blocked by flakes of lymph. It may then be advisable to make a larger opening and to insert an open drainage-tube. By this time all danger from an open pneumothorax will have ceased to exist, and the patient should be in a better general condition to tolerate the more extensive operation. The pull on the lung exerted through the airtight drainage will now be lost; as soon, therefore, as the patient is in a fit state, blowing exercises must be instituted. The greatest care will have to be taken during the dressings to guard against the risks of reinfection. The importance of the care for the patient's general condition must not be overlooked. Plenty of glucose and large draughts of water are essential.

For patients who are delirious and children who are restless or difficult to control, airtight drainage is not advisable owing to the danger that the catheter may be pulled out of the wound. For them it is wiser to continue with aspiration and replacement until it is safer to do a thoracotomy and open drainage.

The choice between thoracotomy through an intercostal space or by rib resection depends very much on the case. The intercostal operation is the simpler and needs a less extensive infiltration with the analgesia. It is not, however, satisfactory when the ribs are in close apposition; it limits the size of the drainage-tube, and there is a risk that the pressure of the tube will produce rib necrosis. There is also the risk of rib necrosis from infection when rib resection is done. This can be guarded against by plugging the cut ends of the bone with paraffin wax.

CHRONIC EMPYEMA

A very large percentage of all cases of chronic empyema are due to the following preventable causes. There is delay in diagnosis until the organisation changes in the deposited lymph have rendered the pleura so rigid that the lung cannot re-expand nor the mediastinum return to its normal position. There is omission to use Carrel Dakin's solution when its solvent action might yet free the pleura of deposited but still imperfectly organised lymph. There is inefficient or wrongly placed drainage. There is reinfection, due most often to the discharge of the patient before the lung is fully expanded and the wound healed. There is the presence of a foreign body due to a drainage-tube lost in the cavity, to fragments of rib, or to osteomyelitis of the rib. A chronic sinus may be due to the drainage-tube being left in too long.

Chronic empyema may also be due to unavoidable causes, such as a persistent pleuro-bronchial fistula, or to disease of the pleural membrane, whether tuberculous or actinomycotic.

The first step in the treatment of a chronic empyema, having ascertained its extent, is to secure efficient, dependent drainage and to irrigate the cavity repeatedly with Carrel Dakin's solution, so as to disinfect the cavity and to strip the pleural membranes of all possible organising lymph. The use of this solution will be impossible if there is a fistula. Blowing exercises are carried out at the same time to encourage expansion of the lung.

The character of the subsequent operation will depend on the extent of the empyema cavity. A small one may be obliterated by removing all the overlying and adjacent ribs. A large cavity, but one in which the lung is not fully collapsed, will need an extensive decostalisation and, in addition, the removal of the overlying thickened parietal pleura, together with the periosteum of the ribs and the intercostal muscles. A cavity with a fully collapsed lung will require additional measures to ensure approximation of the outer and inner walls. To this end it will be

necessary to decorticate the lung—that is, to strip its thickened visceral pleura off the surface of the lung, thus allowing it to re-expand. Such an extensive operation has to be done in stages. The apex is the part most difficult to occlude, and it is essential that complete obliteration be obtained in that area lest the success of the whole treatment be spoilt.

Such is the seriousness of operations for chronic empyema that it behoves the physician to keep a constant watch in every case of recognised or possible pleural effusion, and, by repeated exploratory puncture, if need be, to ensure that at the earliest onset of pus the case is promptly and efficiently dealt with. It behoves the surgeon also to make certain that every available means to procure re-expansion of the lung and obliteration of the pleural space is secured, and to guard against reinfection and the presence of foreign bodies.

Suppuration in the Lung

Lung suppuration offers a variety of clinical pictures. At the one end of the scale there is the acute lung abscess which runs a rapidly progressive course to a fatal termination. At the other extreme there is bronchiectasis, which runs a slow, but usually a progressive course and tends also, in the end, to be fatal. Between these two there are many gradations; there is the less intense subacute abscess, the chronic abscess, abscess complicated by bronchiectasis, and bronchiectasis complicated by abscess. These last two vary in their origin and in the earlier stages of their development, but later produce a picture that is practically identical. The acute, subacute, and chronic abscesses are comparatively amenable to treatment, but abscess complicated by bronchiectasis and all varieties of bronchiectasis are most resistant because of the associated mechanical difficulties.

ABSCESS

An abscess starts as an acute or subacute inflammatory condition. There is a diffuse zone of change in the lung, consisting of a central focus of intense infection and a surrounding area of pneumonic change fading into normal lung tissue to form an irregular pus-containing cavity, which usually communicates and discharges through a bronchus. The change in the outer inflammatory zone varies with the intensity of the infection. In the acute case, no limiting barrier can be formed against the progressive spread of the disease, but in the subacute type a controlling barrier may become possible and the subacute abscess gradually merges into the chronic type. This, in turn, depending on the extent and character of the changes and the absence of active surgical treatment, may become complicated by bronchiectatic changes.

Treatment differs according to the character of the abscess, and, to a less extent, its position. Briefly stated, the surgical treatment most frequently applicable to the acute, subacute, and some forms of chronic abscess is pneumotomy and drainage. When abscess is complicated by bronchiectasis, treatment must be on the lines used for bronchiectasis, and not on those used for abscess. Surgical intervention is not indicated, however, until medical treatment has failed; but it should unquestionably not be postponed until the abscess has become chronic.

When a foreign body is suspected as the responsible factor, bronchoscopy and, if possible, the removal of the foreign body is a proceeding that should be undertaken with the minimum of delay. But in other cases in which the abscess is acute or subacute, medical treatment should be given a trial for a period of six to eight weeks in the hope that, if drainage is efficient, the abscess will clear up without other intervention. This is more likely to happen when the lesion is in the upper lobe.

Should this fail, and in all cases of chronic abscess which, by the very fact that they have become chronic have shown themselves incapable of healing by bronchial drainage, bronchoscopy with aspiration of the pus should be tried. It is only when this also is unsuccessful that operation is indicated. In the case of an acute abscess, however, which is obviously progressing rapidly, and in cases in which the inflammatory processes are associated with gangrene of the lung, delay is not justifiable; the abscess should be opened and drained at the earliest possible moment.

OPERATION FOR LUNG ABSCESS

The first step, when surgical intervention has been decided on, is the localisation of the abscess by antero-posterior and lateral radiograms, preferably taken stereoscopically. Exploration with a needle is absolutely unjustifiable until the parietal pleura has been exposed and the visceral pleura is found to be adherent to it. If the abscess is located with the needle and the pleural cavity is patent, it is almost certain that an empyema will result.

It is for this same reason that it is impossible to decide beforehand whether the operation of pneumotomy can be done in one or two stages. More often than not the pleural membranes are not adherent, and secure adhesions must be produced before the abscess is sought for or opened.

No general anæsthetic is required; the operation can be done without distress to the patient under nembutal-morphine and local anæsthesia. As a general rule the most suitable access for an abscess in the upper lobe is over the first interspace and the second rib in front; for one in the middle lobe, in the anterior axillary line; whilst for an abscess in the lower lobe, in the posterior axillary line or below the angle of the scapula.

A musculo-cutaneous flap is turned off the area of approach It should be of sufficient size to give adequate access, bearing in mind that as the wound later granulates up, this opening will tend to close more rapidly than is convenient. A piece of rib, at least 7 cm. long, is excised, and also the intercostal muscles in the space above. The parietal pleura is exposed. If there are no adhesions, the underlying lung will be seen moving beneath the pleura. Under these circumstances the whole wound is packed with dry gauze and the flap sutured in place. When the abscess involves the apex, it is justifiable to strip the parietal pleura very gently away from the first rib, thus doing a partial apicolysis, and to pack the gauze under the first rib also. If, however, the membranes are thickened and apparently adherent, a small incision should be made cautiously through the parietal membranes to confirm the adherence of the lung. The second stage can then be proceeded with at once; otherwise not till ten days later.

When doing the second stage as a separate operation, nembutal and morphia should be given; a local anæsthetic is usually not necessary. After removal of the stitches, the wound is opened, the gauze is removed, and the cavity swabbed clean. It is now possible to explore with a needle and syringe. When pus is found the syringe is removed from the needle without disturbing its position; the lung is incised with a knife or the cautery, and the abscess opened. The cavity must be explored with the finger and all subsidiary abscesses opened into the main one. A gauze plug moistened in saline is packed firmly into the abscess cavity, and the outer wound is plugged with gauze which has been well covered with warm vaseline to prevent it adhering to the surrounding tissues. In the subsequent treatment, the outer wound must be kept well open until the abscess cavity has become obliterated by granulation tissue.

Should the abscess not be found, a free incision is made into the lung in the hope that the abscess will find its way out through this area. Failing this, lipiodol is introduced into the depths of the lung wound and further X rays are taken from different angles.

Pneumotomy, in order to reach a deep-seated abscess close to the hilum, carries the serious risks that large vessels may be opened, and possibly large bronchi also. The patient is then exposed to the dangers of hæmorrhage from the wound, which is difficult to control owing to the depth from the surface; of hæmoptysis when both vessel and bronchus are opened, or of air embolus. This is just the case for which artificial pneumothorax is permissible and often very effective. Collapse by artificial pneumothorax is dangerous when the abscess is close to the surface, since the pleural cavity is apt to become infected from a superficial abscess.

Pneumotomy is contraindicated also in cases in which abscess and bronchiectasis complicate each other, unless the abscess is considerable and the bronchiectasis a mild secondary change. Extensive collapse by thoracoplasty is indicated in all these cases which involve more than one lobe. For the unilobar lesion, whether bronchiectasis alone or complicated by abscess, resection of the lobe is the operation of choice, despite the considerable mortality.

BRONCHIECTASIS

Bronchiectasis is a dilatation and thickening of the bronchi which, once it has developed, cannot be healed in the way that changes and even destruction caused by other inflammatory diseases can be healed. It is for this reason that the two great difficulties in the treatment of bronchiectasis are that the collapse of the dilated tubes must be complete and must be permanent.

Lobectomy, which eradicates the disease, is applicable to the unilobar lesion only. It is a difficult operation, and under the most favourable conditions has a mortality of 15 per cent. Lobectomy of more than one lobe has been done, but the mortality in these cases reaches 70 per cent. For the unilateral cases one or other method of collapse therapy offers some hope of improvement and even of success.

When a complete collapse of the lung can be obtained by artificial pneumothorax the immediate result is excellent, but the collapse of the lung must be maintained continuously else the symptoms will return. The substitution of the air by oil, once the collapse has been established, lessens very considerably the interval between the refills. Unless, however, the mediastinum is mobile, or a pocket of air is kept constantly above the oil, there are dangers associated with an oleothorax which may lead to serious complications. Hemidiaphragmatic paralysis is occasionally only successful in basal cases. When there is a bilateral basal bronchiectasis a bilateral phrenicectomy should be done, as considerable improvement may result.

Thoracoplasty has the advantage of producing a permanent collapse, but the collapse is not as complete as that obtained by artificial pneumothorax. The results depend on the type of bronchiectasis. If the dilatation involves the main tubes little benefit will follow a thoracoplasty, but if the smaller bronchi and bronchioles are the seat of the trouble, complete or almost complete abolition of the symptoms may result from the operation. When a thoracoplasty is done for bronchiectasis the amount of rib resected must be greater than is usual for a case of tuberculosis. It may also be necessary to supplement the posterior resection by an excision of the costal cartilages from the first down to and including the costal margin. If the supplementary collapse is needed over a localised area only, this may be effected by a further local rib resection or by a paraffin pneumolysis.

SOME ANATOMICAL POINTS IN THE OPERATION FOR UNDESCENDED TESTICLE

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"And rouse from sleep that fell anatomy."
—King John, Act III., scene 4.

It is a useful platitude that the first step in trying to correct some congenital abnormality of the body is to define the normal structure and mechanics of the part concerned. In the surgical treatment of undescended testis therefore, before trying to shift the misplaced organ into its normal position, it is reasonable to investigate how exactly this normal position is maintained.

The suspension of the testis, like a weight at the end of a rope, is unique in the mechanics of the body, and it is not extremely obvious upon what structures the pull of gravity falls. The skin can be at once eliminated from any share in opposing this pull. Its behaviour in obesity, in large herniæ, or in the lips which certain African tribes stretch to the size of saucers, shows that it yields almost indefinitely to any persistent force, however small. To turn from analogy to experiment, it will be found that it is impossible to drag the normal testis downwards far enough to put a strain on the skin of the scrotum.

The dartos and cremaster muscles have of course a suspensory action; when they contract the testis is raised. But muscles are only fitted to exert force intermittently, and the body invariably backs them up by some arrangement of fibrous tissue to supply a passive but permanent safeguard when there is any danger of displacement of structure. A good instance of this is the relation of muscles and ligaments around joints.

The probability is then, that there is a secondary fibrous suspension of the testis. To counteract the force of gravity its direction must be straight up and down, and so it must run with the spermatic vessels and the vas, which lead directly downwards to the organ. These structures can be ruled out as being themselves the weight-bearers by virtue of another of the fundamental principles of the body: the principle that to one structure there shall be one function alone. (It is a rule whose wisdom the human inventor has usually to find out for himself; the combination tin-opener and mouse-trap is rarely a success.) The slackness and tortuosity of the blood-vessels, which enables them to convey fluid through all changes of pressure and position, completely unfit them for resisting tension. The same applies to the vas, which has many points of resemblance to an artery.

DISSECTION OF THE SUSPENSION OF THE TESTIS

To find out whether there actually exists the structure which has been deduced from the combination of the habits of the body and the mechanics of the problem, two incisions are needed. The first is an ordinary midline one that opens the peritoneal cavity and lays bare its posterior wall. Then, when the action of gravity is imitated and exaggerated by dragging downwards on the testis, it is seen that the strain of this drag passes up along the cord past the internal ring, to radiate over the exposed posterior abdominal wall. The main stress comes on fibres which can be seen and felt beneath the

peritoneum running upwards and outwards from the convexity of the curve described by the spermatic vessels in the iliac fossa, but the pull is felt far above this and even the kidney moves with it. The peritoneum, of course, moves with the shifting of the structures underneath it, but it is far too flimsy and extensible to withstand the strain; the structure which is sought must lie beneath it. To show this structure a second incision is made.

This incision divides the entire muscular abdominal wall from the lumbocostal angle to the scrotum, opening that line of cleavage which lies directly beneath the muscles and which the surgeon uses for the "extraperitoneal" approach to the ureter or iliac vessels. Dissection is carried on in this interspace over the entire side of the abdomen, leaving the muscles on the outer side of the cleft and the spermatic vessels, the ureter, and the kidney on the inner.

The cord is now freed from the opened inguinal canal, and at the point where it joins the main mass of abdominal contents the peritoneum is exposed by pulling the spermatic vessels and their accompanying tissues away from it. The true peritoneum is a membrane hardly thicker than a soap-bubble, but it is possible to carry a second splitting dissection between it and the tissues to its outer side over much the same extent as the first one.

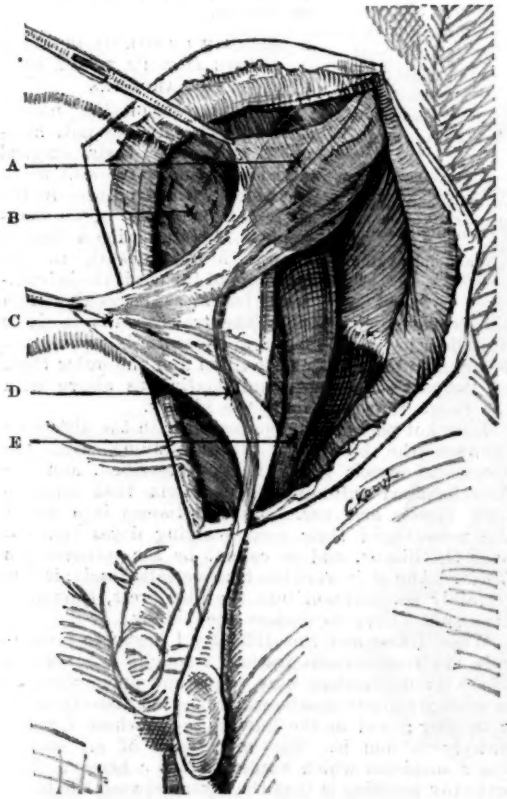

FIG. 1.—Dissection showing the layer of tissue in which the spermatic vessels run, isolated between the peritoneum on the inner side, and the muscle-sheaths of the abdominal wall on the outer. A fan-shaped prolongation of its fibres can be seen running down with the cord towards the testis, which has been pulled out of the scrotum. A = Kidney in its fibrous sheath. B = Peritoneum covering intestines. C = "Abdominal connective tissue." D = Spermatic vessels. E = Psoas muscle.

The final result is the isolation, between the two planes of dissection, of a layer of fibrous tissue which is apparently continuous around the whole extent of the abdominal cavity (Fig. 1). Above it becomes thick and fatty to ensheathe the kidney; below this the ureter and the spermatic vessels run in its substance; and at the internal ring a prolongation of its fibres accompanies the spermatic vessels through the inguinal canal down to the testis. It is this prolongation whose fan-shaped upper end was demonstrated through the intact peritoneum by pulling upon the cord, and which normally takes the weight of the testis off the vessels and the vas when the suspensory muscles relax.

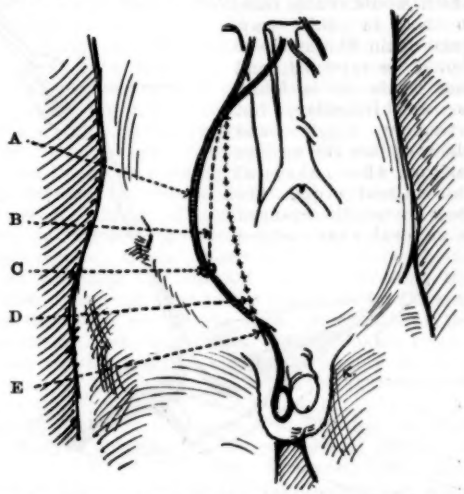

FIG. 2.—Diagram showing the three stages in lowering the testis. A = Normal course of spermatic vessels. B = Course of vessels after freeing them from abdominal connective tissue. C = Internal abdominal ring. D = Course of vessels after division of internal crus of internal ring. E = External abdominal ring.

The practical object of these investigations is to find out how to lower a testis as far as possible without destroying either of its two indispensable connexions with the body, the vas and the spermatic vessels. Obviously the next step is to divide the fibrous suspension that has been demonstrated and to observe the result. When this has been done and the spermatic vessels have been freed they straighten out both in their main curve and in those minor irregularities which they possess in common with all blood-vessels, so permitting a marked lowering of the testis. This straightening, however, makes the vessels meet the inguinal canal at a distinct angle of about 45°, instead of curving gently into it as they did originally (Fig. 2). There is normally a sharp turn at this point in the course of the vas, and investigation, either by dragging hard on the cord or by feeling with the finger, will make it clear that there is some firm structure here which maintains an angle in the constituents of the cord, and consequently prevents the maximum descent of the testis which that cord suspends.

Whatever this structure is, besides maintaining this angle it must form the boundary between oblique and direct inguinal herniæ, it must be capable of taking its part in the strangulation of a hernia at the internal ring, and it must raise that fold in the peritoneum which is always to be seen just internal to the point at which the testis originally left the abdomen. In text-books, of

course, the dividing structure between direct and indirect herniæ is always described as the deep epigastric vessels, but it has been already pointed out that unsupported blood-vessels have not the tenseness and rigidity which would enable them to act in this way. Once again fibrous tissue should be expected, and once again it is found as an irregular but extremely tough band which defines the median half of the internal abdominal ring. Its fibres are usually arranged as several sharp-edged crescentic folds, blending behind with the sheath of the iliac vessels and in front with the general extraperitoneal fibrous tissue. In its shelter run the deep epigastric vessels, and once it has been divided it will be found that these vessels are so slack that they can be moved with ease downwards and inwards to the level of the external ring. This allows the complete straightening of the spermatic vessels, and as in almost all cases this straightening still leaves a definite amount of slack in the vas, nothing further can be done to allow the testis to descend.

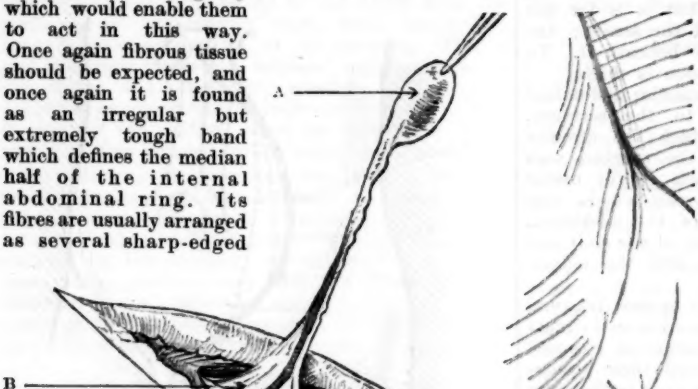

FIG. 3.—Drawing of an operation, showing a fan-shaped band of fibres spreading outwards and upwards from the spermatic vessels at the internal inguinal ring. The vas is seen turning at a sharp angle to join the cord, this angle being maintained by the fibrous internal crus of the internal ring. The deep epigastric vessels are running in the shelter of the internal crus, and take no part in bounding the ring. A = The testis. B = Fan-shaped expansion of suspensory fibres. C = Spermatic vessels. D = Vas deferens. E = Edge of internal crus of internal abdominal ring. F = Deep epigastric vessels.

SURGICAL IMPORTANCE OF THE STRUCTURES DESCRIBED

In the operation for undescended testicle the suspensory fibres must be deliberately and delicately isolated where they spread out in a fan shape from the spermatic vessels at the internal ring (Fig. 3). This fan can be felt running upwards free between the peritoneum on the inner side and the muscles on the outer; the veins are carefully defined on its inner edge, and it is divided piecemeal.

The final step in lowering the testis is a similar cautious division of the band which maintains the angle of the vas and the spermatic vessels at the internal ring. As has been already stated, when this is done the deep epigastric vessels are no obstacle to the complete shifting inwards of the cord, and consequently there is no need to divide them as Davison[1] recommends.

In the radical cure of an inguinal hernia, again, one of the main points in avoiding recurrence is to obliterate completely any dimple at the site of the original neck of the sac. In consequence the band which defines the inner edge of both the neck of the sac and of any dimple which may remain after the sac's removal is probably worthy of more attention than it usually receives.

There is also some surgical interest in the possible importance of the suspensory fibres in the production of varicocele. If the primary muscular suspension is put out of action for long periods, for instance by general debility or by residence in the tropics, the ensuing tension on the fibres must tighten them across the veins and so impede the return flow of blood. It is possible that an operation planned to relieve this might be more satisfactory than the present technique; it could scarcely be less so.

A CRITICISM OF THE DESCRIPTION OF THE FIBROUS TISSUE OF THE ABDOMEN

The interest of the fibrous bands described does not, however, end with their surgical division; they have still to be identified with structures in the systematic anatomy of the text-books. These describe a funnel-shaped fibrous sheath to the elements of the cord, the infundibular fascia, as descending from the transversalis fascia. The transversalis fascia is described in its turn as an aponeurotic layer inserted below into the crest of the ilium and the outer third of Poupart's ligament, and continuous above with the fascia that surrounds the kidney.

I am not particularly concerned with the difference between the bundle of fibres running with the spermatic vessels which I have described, and the funnel-shaped infundibuliform fascia that encloses both vessels and vas. But the tissues into which the vessels and their accompanying fibres run lies over the iliacus, and so cannot be the transversalis fascia. And if it were the transversalis fascia, it has certainly no insertion into the iliac crest, though it does split above to enclose the kidney.

When I first met this difficulty I began to investigate the transversalis fascia. I sought it in books, where its descriptions were vague and unconvincing; in anatomy departments, which had no dissections of it to offer; and in the human body, where I failed entirely to find it. The only result of my search was a suspicion which hardened into a heresy. The orthodox teaching is that the layer between the filmy true peritoneum and the muscles of the abdominal wall, that layer whose isolation by dissection I have described, consists of three distinct structures: the fibrous layer of the peritoneum, the extraperitoneal connective tissues, and the transversalis fascia. My heresy is that these three are one and indivisible.

This opinion is less startling than it looks, as it is held, though without any exact formulation of it, by almost every surgeon. The "peritoneum" sewn up in any abdominal operation contains the three layers of the anatomist welded to the endothelial lining of the abdominal cavity, but no surgeon ever refers to these layers as separate entities.

My own belief in the infallibility of the present systematic anatomy departed permanently after my investigations on the tonsil, an anæmic scrap of lymphoid tissue upon which the classical account concentrates some half a dozen arteries. But to anyone who doubts the possibility of gross misdescriptions being copied from one anatomy book to another, I would recommend consideration of the state of mind shown by the use of one term in the name of the structure under discussion, the word "fascia." The first essential in the scientific description of any subject is a narrow and sharply defined meaning to any terms that are used. In spite of this structures which are different developmentally, morphologically, and functionally are all lumped together under this one heading. Consider the absurdity of using the same term for a tendon like the fascia lata, and for a vague concentration of fibrous tissue like the fascia of Camper. Or why should the expansion of the tendon of the palmaris longus in the palm be an aponeurosis, and the precisely similar expansion of the hamstrings in the leg be fascia? This confusion is at its maximum in the pelvis, where the muscle sheaths and tendons on the one side and the packing material between the viscera on the other, are described as the visceral and parietal layers of the same fascia. I feel diffident about attacking the mystery of the pelvic fascia. What student has not been reduced to a wholesome state of modesty by his complete failure to understand it? What professor of anatomy is not rumoured to be writing a book upon it? And yet I must confess that I believe the whole doctrine, like certain ones of the early Alexandrian theologians, to be founded upon the double meaning of a single word.

The difficulty of identifying the fibrous suspension of the testis with the internal spermatic fascia is paralleled by the difficulty of finding an exact anatomical name for the condensation of fibres which has been described at the upper end of the inguinal canal. It is, of course, the band which Hesselbach [4] described as the internal crus of the internal abdominal ring. In his drawings he shows with great clearness that it is this structure, and not the deep epigastric vessels, which actually forms the inner border of the gap through which an indirect hernia emerges. But I cannot see it as he draws it, directly continuous with the sheath of the rectus. It is quite different in texture from the tissues that transmit muscular force, and a strong argument against this band belonging to the muscular system is that the contraction of the abdominal muscles must slacken it by bringing the arch of the conjoint tendon near to Poupart's ligament; fibrous tissue which really belongs to muscles only serves the purpose of applying the force of the contractions, which invariably tighten it.

To me this band appears to be a typical condensation of the extraperitoneal fibrous tissue which may possibly have been originally produced by the emergence of the testis. If one imagines a loose fabric lining the abdominal cavity, the thrusting through it of a finger at the internal ring in the direction of the inguinal canal would produce just such concentration of fibres at this point. However, this is an unimportant speculation.

The "interfoveolar ligament," which is described in some books as crossing the floor of the inguinal canal between the sites of direct and indirect herniæ, appears to consist of aberrant strands of muscle which not infrequently stray from the transversalis in this region. Quain [5] shows it as superficial to the tissues bounding the internal ring and flooring the inguinal canal, but adds to the confusion by showing these tissues as continuous with the sheath of the transversalis and calling them the "iliopubic tract."

Most of the modern text-books simply describe the floor of the inguinal canal as being formed of transversalis fascia and let it go at that. It may be noted that though it is always stated that the cord carries with it prolongations of each of the layers of the abdominal wall, the extraperitoneal tissue and the fibrous layer of the peritoneum are never mentioned in the catalogue of these.

SUGGESTIONS FOR A DESCRIPTION OF THE FIBROUS TISSUE OF THE ABDOMEN

As a target for retaliatory criticism I offer the outline of a description of the abdomen in which a layer, "the abdominal connective tissue," is described as forming a complete investment for the abdominal contents, between the osteomuscular box on the outer side and the peritoneal sac on the inner. Only

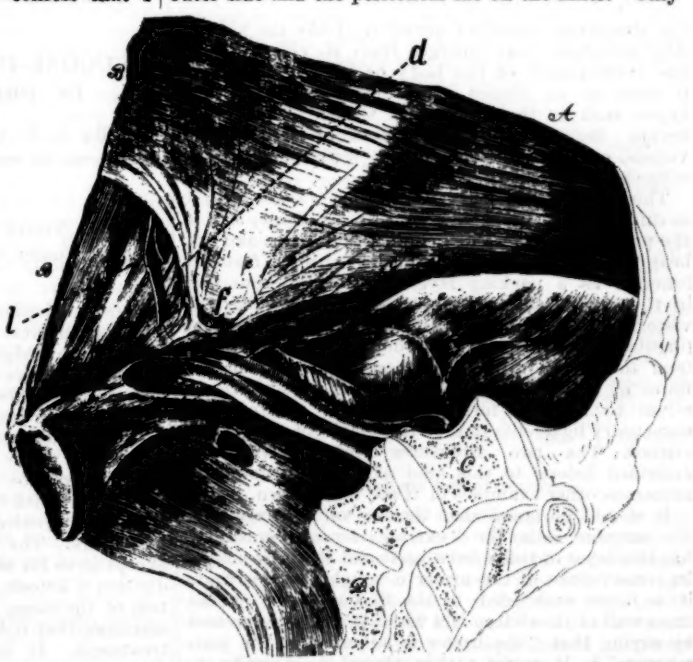

FIG. 4.—One of Hesselbach's original drawings, showing that it is the band of fibres which he calls the internal crus, and not the deep epigastric vessels, which bounds the internal abdominal ring. *d* = Internal crus of internal abdominal ring. *l* = Deep epigastric vein. *f* = Internal abdominal ring.

when it is isolated in this way can the ordinary mind form a picture of a continuous "packing layer" that includes the transversalis fascia, the tela subserosa, the fibrous layer of the peritoneum, the visceral layer of the pelvic fascia, the kidney fascia, the extraperitoneal fat, and all the other indefinite terms which do so little credit to one of the exacter departments of medicine.

All the viscera can be described in relation to this layer, either sessile upon its inner surface like the liver, attached to it by a bridge of its substance like

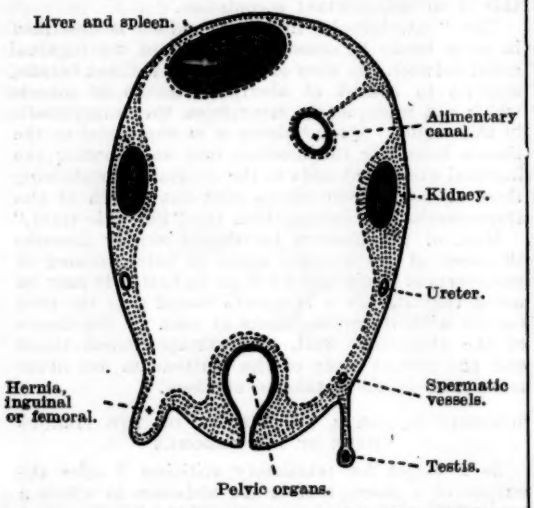

FIG. 5.—Diagram showing the arrangement and distribution of the "abdominal connective tissue," as a single layer of fat and fibres, in which the various viscera are packed between the peritoneum and the muscles, and which supplies a covering to anything that runs outwards through it.

the alimentary canal, or buried in it like the kidney. Any structure that emerges from it, either during the development of the body or later, carries with it some of its tissues in prolongations of varying types, such as the fatty outer sheath of a femoral hernia, the dense fibrous sheath of the femoral vessels, or the suspension of the testis which is the subject of this paper (Fig. 5).

This abdominal connective tissue varies greatly in different regions in its thickness, its shape, and in the proportions which its two elements, fibres and fat, bear to each other. As might be expected from its function as a packing layer, it is most abundant in the lower part of the abdomen into which the viscera sag and strongest round the openings (inguinal canal, anus, &c.) through which the viscera tend to escape. Wherever there is any strain the fibres of this layer concentrate and organise themselves to meet it, forming, as Lane pointed out, suspensory ligaments to take the weight of the various viscera. The two structures which have been described belong to this kind of concentration, and numerous other examples of it are well known.

It should be noted that the line of cleavage that the surgeon calls the "extraperitoneal approach" has this layer of tissue between it and the peritoneum. In consequence, if the ureter is sought by this route it is found embedded in the fibrous tissue on the inner wall of the cleft, a fact which is usually expressed by saying that "the ureter is adherent to the peritoneum."[2] It seems rather absurd to describe as extraperitoneal a line of cleavage that leads into the cave of Retzius in one direction and behind the kidney in the other; perhaps "submuscular" would be a better name.

The dissection which shows the abdominal connective tissue best is not possible in the systematic taking to pieces of the body, but it is an instructive and not particularly difficult way of doing a post-mortem examination of the abdomen. In it the muscles of the abdominal wall are divided by a cruciform incision reaching from loin to loin, and from the sternum to the pubis. The submuscular or "extraperitoneal" space is found below the muscles, and the whole abdomen is dissected in it. The œsophagus, the great vessels, and the structures emerging through the pelvic diaphragm are cut through as they are met; the testis is pulled up through the inguinal canal, and the final result is the removal of a sausage-shaped mass containing all the viscera. This mass contains the peritoneum and in many places consists of what is usually called peritoneum, but nowhere is the true membrane itself visible.

It appears to me that in this way it would be possible to offer to the student of anatomy a comprehensive yet comprehensible account of something of the utmost surgical importance—the fibrous tissue between the peritoneum and the osteomuscular wall of the entire abdominal cavity. If any professor of anatomy needs to be convinced of the utter confusion produced by the present teaching, I recommend the setting of a question on these lines at the next examination.

I owe many thanks to Mr. C. A. Keogh, F.R.C.S., for his help in the dissections and for his drawings to illustrate them.

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GLUCOSE-INSULIN ADMINISTRATION IN PROLONGED NARCOSIS

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THE development of narcotic treatment in certain types of mental disease has been greatly retarded by the knowledge that prolonged narcosis for therapeutic purposes is often accompanied by toxic symptoms. These symptoms may be such as to render further treatment with the narcotic inadvisable or dangerous, and consequently the treatment has frequently to be stopped before there is any chance of an alleviation of the abnormal mental symptoms.

In the Cardiff City Mental Hospital about 50 cases have been treated with Somnifaine[1] during the past two years. The results were extremely encouraging except in so far as toxic symptoms, including the production of ketosis, were demonstrated in a large proportion of the cases. The toxic by-effects were often so alarming that it became necessary to discontinue the treatment. It has been felt, however, that the

[1] Somnifaine is an alcohol-glycerol-aqueous solution of a mixture of diethylamine salts of 10 per cent. veronal and 10 per cent. allylisopropylbarbituric acid.

success obtained in the prolonged narcosis treatment of many cases of mental disorder has warranted a search either for new drugs which will produce sufficiently deep narcosis without the demonstration of toxic by-effects or for a modification of present methods of narcosis which will diminish or eliminate the toxic action.

The toxic effects of narcotic treatment, particularly by somnifaine, have been described by A. M. Meerloo[2] and M. Müller.[3] These include bulbar symptoms, such as derangements of swallowing mechanism, indistinct speech, ataxia, tremor of the lips, and vasomotor paralysis. A frequent accompaniment of prolonged narcosis is the development of ketonuria, which becomes more marked as the narcosis proceeds. The amount of ketonuria varies from person to person; in certain patients there is little or no ketonuria after seven days' narcosis under somnifaine, whereas in others the ketonuria may become very marked 48 hours or less from the commencement of the treatment. Doubtless the effect has much to do with the actual dosage of the narcotic, certain patients responding more vigorously than others, so far as ketosis is concerned, to a given dose. In the past it has always been considered advisable in this hospital to cut short treatment with somnifaine (the drug most frequently used) as soon as a definite ketosis has been produced. This has militated greatly against the success of narcotic treatment.

THE ACTION OF NARCOTICS

Investigations have been carried out recently in this laboratory on the mode of action of narcotics. The problem has been studied from a biochemical standpoint, the object being to discover what metabolic processes were influenced by the presence of the narcotic. The results,[4] briefly, are: (1) all narcotics have the property of inhibiting specifically, at low concentrations, the oxidation by the brain of substances important in carbohydrate metabolism—viz., glucose, lactic acid, and pyruvic acid; (2) of narcotics belonging to the same chemical type, those with the greater narcotic activity have the greater inhibitive action on brain oxidations. There is a definite parallelism between the inhibitive power on glucose oxidation of brain and the narcotic power of the drug.

It seems from the facts available that the narcotic is taken up from the blood stream at a nervous centre, where it effects a diminution of the power of the cells constituting the centre to oxidise glucose or lactic acid. The amount of energy available for the functional activity of these cells is thereby diminished and narcosis—or a depression of the functional activity of the nervous centre in question—ensues. These observations led to the supposition that narcotics may exert toxic effects in the animal organism by interfering with the carbohydrate metabolism of organs other than the brain, a view supported by experimental observations on liver oxidation in the presence of narcotics and by the fact that ketonuria is a frequent accompaniment of narcosis. It is remarkable that the development of ketosis which so frequently occurs in surgical anæsthesia has not been previously noted, to our knowledge, in prolonged narcosis.

[2] Meerloo (Zeits. f. d. ges. Neurol. u. Psychiat., 1930, cxxvii., 168) gives a detailed survey of the literature of narcosis treatment.

[3] Ibid., 1925, xcvi., 653.

[4] Quastel and Wheatley, A. H. M.: Proc. Roy. Soc., B, 1932, cxii., 60; Davies, D. R., and Quastel: Biochem. Jour., 1932, xxvi., 1672.

AN EXPERIMENTAL INVESTIGATION

It was found from certain preliminary experiments that the simultaneous administration of glucose and insulin to narcotised animals brought about a decrease in toxicity of the narcotic, and this work led us to consider the possibility of administration of glucose and insulin to patients undergoing narcotic treatment.

So far, 20 patients have been investigated. The usual procedure has been to administer 2 c.cm. of somnifaine intramuscularly from two to four times in 24 hours, most patients receiving three doses a day. The urine was collected in the morning and afternoon, the morning specimen being always examined for acetone bodies. The Rothera nitro prusside test was used for the colorimetric demonstration of acetone, and in many cases acetone was estimated quantitatively.

As soon as definite ketonuria appeared the following modified procedure was adopted. Simultaneously with the next intramuscular injection of somnifaine 5 to 15 units of insulin were given hypodermically, this dose of insulin from then onwards being administered twice or thrice a day (with each subsequent dose of the narcotic). With each insulin injection the patient received (by the mouth) 50 g. of glucose in water or milk. Blood-sugar estimations were frequently made as a precautionary measure. The doses of glucose and insulin cited have been, in our experience, sufficient to avoid hypoglycæmia.

The immediate result of the insulin-glucose modification of the narcotic treatment was the entire disappearance of ketonuria within 48 hours. The patient, moreover, showed no ketonuria during the remainder of the course of the narcotic treatment, which lasted from 14 to 16 days. It is as yet too early to decide whether all other toxic symptoms disappear, but it has been noted, in particular, that cyanosis, alarming drowsiness, and vomiting are symptoms which either partially or completely disappear under the modified treatment. The accompanying Table shows typical examples of the effect of glucose-insulin treatment on the disappearance of ketosis during somnifaine narcosis.

Case.	Dosage of somnifaine throughout treatment.	Day of appearance of ketonuria after commencement of narcosis.	Acetone in urine mg. per 100 c.cm.	Day of first administration of insulin and glucose.	Acetone in urine mg. per 100 c.cm.
1	2 c.cm. t.i.d.	6th	12 (6th day); 31 (7th day).	7th	3 (8th day); nil (9th)*
2	2 c.cm. t.i.d.	7th	5 (7th day); 19 (8th day).	8th	Trace (9th day); nil (10th)*
3	2 c.cm. t.i.d.	4th	+ + + + + (4th day).	5th	Trace (6th day); nil (7th)*
4	2 c.cm. t.i.d.	1st	+ + (1st day).	2nd	Nil (3rd day)*

* and subsequent days of treatment.

In two cases glucose and insulin were given at the commencement of the course of treatment, and in neither of these cases has ketosis developed throughout the entire course. It seems probable that the most desirable procedure is to give glucose and insulin at the commencement of a course of narcotic treatment, in order to prevent the appearance of ketosis and other toxic symptoms.

Out of the 20 patients investigated, 13 have had glucose-insulin treatment, with the result that they

have finished their course of narcotic treatment without development of ketosis or other serious complications. Of the remaining 7, who showed no ketosis and who did not have glucose-insulin treatment, 3 received only two doses of somnifaine a day. While admittedly few patients have been as yet subjected to the modified treatment, the results have been so satisfactory that we have considered it advisable to publish this preliminary note. Further investigations on this mode of treatment, particularly from a clinical standpoint, are in progress.

We wish to express our appreciation of the interest taken in this work by Dr. P. K. McCowan, medical superintendent of the hospital, and to acknowledge our indebtedness to the Medical Research Council for a grant to the laboratory.

SOME RECENT OBSERVATIONS ON FILARIAL PERIODICITY

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With a Clinical and Laboratory Report by
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Interest has once more been aroused in the seemingly inexplicable phenomenon of filarial periodicity, the existence of which was discovered by Manson in Amoy and further worked out by him and Stephen Mackenzie in London in 1881–82. Since that date little or nothing has been done to illuminate further the pioneer observation of these two workers.

As is well known, the embryos of *Filaria bancrofti* maintain a nocturnal periodicity in the peripheral circulation; that is, they come into and circulate in the peripheral blood at night and disappear during the day. This curious phenomenon, as seen in this particular parasite, appears to be connected with the habits of its definitive host, and so intimately is this the case that the periodicity can in time be gradually reversed if the patient changes his daily routine—for example, sleeping during the day and sitting up at night. This is a well-established fact. In *Loa loa* infections, where the periodicity is diurnal, this reversion cannot be effected easily, and in two cases reported by Low and O'Driscoll [1] no change had taken place in six days' time. Kulz,[2] however, has shown that it may gradually take place.

The observations which are recorded below abundantly confirm the truth of Manson's original discoveries and add weight to the statement of Dr. Mortimer Granville [3]:

"It is not sleep or waking that has this influence. It is something recurring every 24 hours, just as the habits of sleeping and waking recur, and which is capable of being inverted, just as these habits are, and by the same means. That sleep does not cause the ingress of embryos is evident from the circumstances that egress begins hours before the usual hours of waking, and periodicity is maintained even though no sleep be indulged in for two or three days, and if sleep is continuous, or nearly so, for as long a time. The facts of the case seem to indicate that the conditions favourable to the ingress of the parasites become developed ordinarily during the last few hours of the waking state and that they are slowly eliminated during the last few hours of sleep."

The novel and revolutionary theory of Clayton Lane [4] would explain the phenomenon of periodicity by periodic cyclic parturition on the part of the female filaria with a daily destruction of all the embryos, and this hypothesis has received some support from the carefully conducted observations of F. W. O'Connor [5 6] on the uterine contents of the adult female worms removed by operation at different hours of the day. What is difficult to understand in this theory, apart from the massive daily production of embryos, is the fate of the millions of embryos which would be destroyed by this daily holocaust, and the effect that the absorption of this mass of dead material would exert on the apparently healthy human body. It does not explain, either, the comparative ease with which embryos are kept alive in blood or saline solution outside the human host for a week or more. No adequate explanation is at present forthcoming of what becomes of the millions of embryos so destroyed. A fact repeatedly emphasised is that those cases of *F. bancrofti* with the highest number of embryo filariæ in the circulating blood are often those which show the fewest signs of filarial disease. A massive destruction such as that postulated would have to be sudden and swift so as to cause the disappearance of the brood every 12 hours, and the liberation of this amount of foreign protein, one would imagine, would be liable to produce considerable reaction in the human body—a species of protein shock.

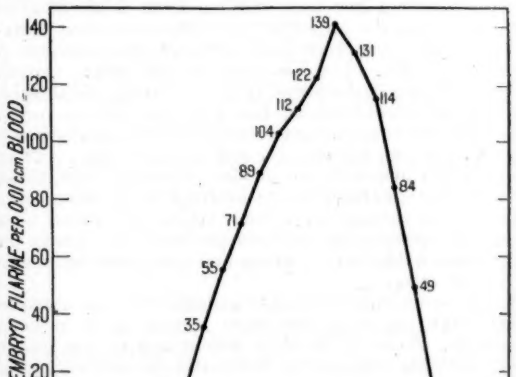

FIG. 1 shows the average number of embryo *Filaria bancrofti* per 0·01 c.cm. of a patient's blood during 24 consecutive hours of normal life. The blood was measured by means of a leucocyte-counting pipette, and these counts represent the mean average calculated from direct counts of living embryos by the cover-slip method and indirect counts from standard quantity thick blood films taken at the same times, being stained and counted afterwards.

A CASE-HISTORY

The observations recorded in the paper accompanying these preliminary remarks have been made after very considerable and minute work by Mr. A. H. Walters, the senior laboratory assistant at the Seamen's Hospital, Royal Albert Dock. The chief points in the case are these. The patient, an Indian steward of the P. and O. Line, has been more or less under observation for 11 years. During this comparatively long period he has exhibited approximately

the same number of embryo filariæ in his blood, and they have maintained the same nocturnal periodicity. Apart from a hydrocele and an enlarged testicle, both probably filarial in nature, he has never developed or exhibited any further signs of filarial disease.

The number of embryo filariæ in his blood has been very considerable—about 260 to 20 c.mm. of blood at midnight—and as the patient has frequently been to the Hospital for Tropical Diseases and the Seamen's Hospital, Royal Albert Dock, for dysentery, venereal disease, and finally for pyloric stenosis, there have been ample opportunities for prolonged observations on his blood.

The observations on the nocturnal periodicity in this case were made at hourly intervals, and were carried out with meticulous care. Dry and wet films were prepared at the bedside and examined forthwith, and a standard quantity of 10 c.mm. was employed (which is half the amount of the 20 c.mm. which is

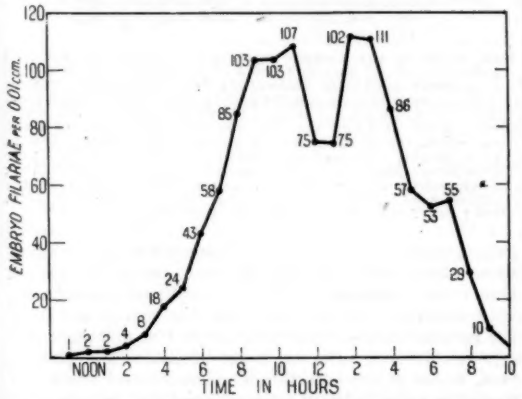

FIG. 2 shows the average number of embryo *F. bancrofti* per 0·01 c.cm. of a patient's blood during 24 consecutive hours of reversed life. The patient was given hyoscine gr. 1/100 and morphia gr. 1/48 at 10 A.M. on June 15th and put to bed in a darkened private room. 11 A.M.–3 P.M.: patient asleep. 4 P.M., awake; given a drink of water and luminal grs. ½. 5 P.M.–8 P.M., asleep. 9 P.M., dozing. 10 P.M., waking and irritable. 11 P.M., fully awake. 11.30 P.M., got up and had meal of tea, eggs, and toast. 12 P.M., out for a walk of 40 minutes in hospital grounds. 1 A.M., fully awake and chatting, feels quite well. 1.30 A.M., had meal of tea and toast; feels quite well. 2 A.M., lying quietly in bed, feeling drowsy. 3 A.M., dozing. 4 A.M., asleep. 5 A.M., awake and tired. 6 A.M., drowsy and slightly irritable. 7 A.M.–9 A.M., asleep but waking at any noise. 10 A.M., asleep.

commonly adopted). The main points brought out by Mr. Walters's graphs are these:—

(*a*) The periodicity curve is absolutely nocturnal but embryos are present in small numbers in the peripheral circulation during the daytime. This fact has often been noted before (Fig. 1).

(*b*) The evening rise of the embryo filariæ swarm is more gradual in character than the matutinal fall. The maximum migration of embryos occurs at 2 A.M. (Fig. 1).

(*c*) The number of embryo filariæ and the character of the curve remains remarkably constant when taken on three distinct occasions, separated by a month or more of time—viz., June 4th, August 29th, and Sept. 2nd, 1932 (Figs. 1 and 4).

(*d*) The number of embryo filariæ at the hour of midnight remains approximately the same in 1932 as it was in 1924, a period of eight years, and it has been shown by Mr. Walters that the experimental error of observation in his series is a very small one indeed (Fig. 5).

(*e*) The periodicity curve remained the same after a severe abdominal operation, but it was severely disturbed during a break of sleep (Fig. 2) and after systemic disturbance such as protein shock (Fig. 3). The fall in periodicity takes place immediately the waking state is entered upon.

This series of accurate experiments forges yet another link in the chain of evidence which supports the contention that the sleeping and waking states are primary factors in the periodicity phenomenon in this particular infection. Whether similar fluctuations can be brought about in the relative number of circulating embryo filariæ in the Pacific, non-periodic

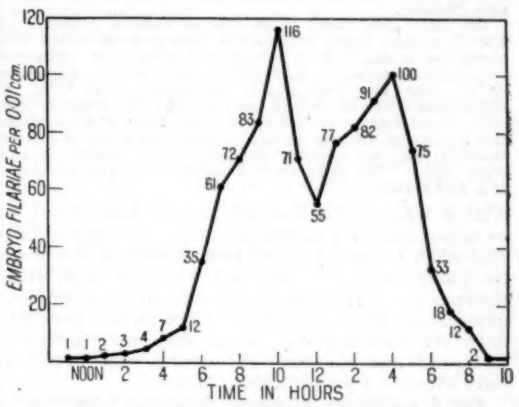

FIG. 3 shows the average number of embryo *F. bancrofti* per 0·01 c.cm. of a patient's blood during 24 consecutive hours whilst undergoing a protein shock. 5.5 P.M., the patient was given an intravenous injection of 50 million T.A.B. vaccine. 6 P.M., complains of vague pains all over body. 6.52 P.M., suffering rigor. 7.5 P.M., temp. 103·4°, sweating. 8 P.M., feels better; temp. 101°. 9 P.M., asleep; temp. 100·8°. 10 P.M., asleep; temp. 100·4°. 11 P.M., awake, temp. 100°. 12 P.M., awake; temp. 99·6°. 1 A.M., awake; given hot meal; temp. 99·4°. 2 A.M., dozing. 3 A.M.–6 A.M., asleep. 7 A.M., awake; feels all right. 8 A.M.–10 A.M., awake.

variety of *F. bancrofti* remains to be seen, and it is hoped that similar experiments on the same lines may be instituted.

It is also hoped that Prof. O'Connor and others investigating the possibility of cyclical parturition may undertake similar observations, as the conclusions arrived at in this particular piece of work seem impossible to reconcile with their hypothesis. How, also, can a daily cyclical destruction of embryos explain the phenomenon of non-periodic filaria? In *Dipetalonema perstans* infections (non-periodic) in Uganda, Low [7] counted the embryos in a measured quantity of peripheral blood (20 c.mm.) just before patients suffering from sleeping sickness died and then, immediately after death with the blood still warm, similar measured quantities from the aorta, heart, or lungs. The numbers of embryos present in these sites were always greatly in excess of those in the peripheral blood, indicating a seat of special selection in these parts.

More work might also be done on dogs and other animals, where it will also be found that the seat of special selection of the embryos is often in the large vessels of the thorax, only the overflow, apparently, passing into the peripheral blood with no periodicity. Autopsies on dogs might prove or disprove the cyclical theory.

History and Laboratory Reports

(BY MR. WALTERS)

The patient was first seen at the Hospital for Tropical Diseases in October, 1920, when a series of intravenous antimony injections were given,[8] and again in May, 1924, when Bayer "G. 1919" was tried for treatment.[9]

He was a male Indian native aged 50, born in Calcutta, where he had lived till going to sea 18 years before. He had had fever in 1898 (? nature), syphilis in 1916, and dysentery in 1918. In 1924 he had been in the Hospital for Tropical Diseases. In 1927 he had had stomach trouble; in 1932 he was admitted to the Seamen's Hospital, Royal

Albert Docks, for a recurrence of this. He was operated on, and the stomach was found to be dilated, with fibrous thickening due to previous ulceration on the lesser curvature, sufficient to cause pyloric stenosis. Gastro-enterostomy was performed and the appendix was removed, as it was also diseased.

On June 15th, 1932, there was no definite evidence of filarial disease, apart from slight enlargement of the left testis and a slight hydrocele on the same side. The red corpuscles numbered 5,500,000; the white corpuscles 9375; and the hæmoglobin percentage was 100. A differential count showed 73 per cent. of polymorphonuclear cells, 19 per cent. of lymphocytes, 6 per cent. of eosinophils, and 2 per cent. of large mononuclears. Embryos of *Filaria bancrofti*, but no malarial parasites, were present in the night blood. The fæces showed no ova with the exception of a few *Trichuris*.

As it was evident that the patient would have to be in hospital for a considerable time, the opportunity was taken to do a series of examination of the blood for filarial embryos. Dry and wet films were used, the embryos in the latter being counted at the bedside immediately after preparation; the former were left until the following day, when they were dehæmoglobinised and stained. The counts were found to tally within 0·5 per cent. error factor.

Fig. 1 illustrates a typical nocturnal periodicity; Fig. 2, the irregularity produced by putting the patient to bed during the day and inducing sleep by means of drugs; Fig. 3, the irregularity produced by intravenous injections of T.A.B. vaccine; Fig. 4 (A), another count showing normal periodicity while leading a normal life, and (B) while leading a normal life and after five days atebrin treatment, the latter

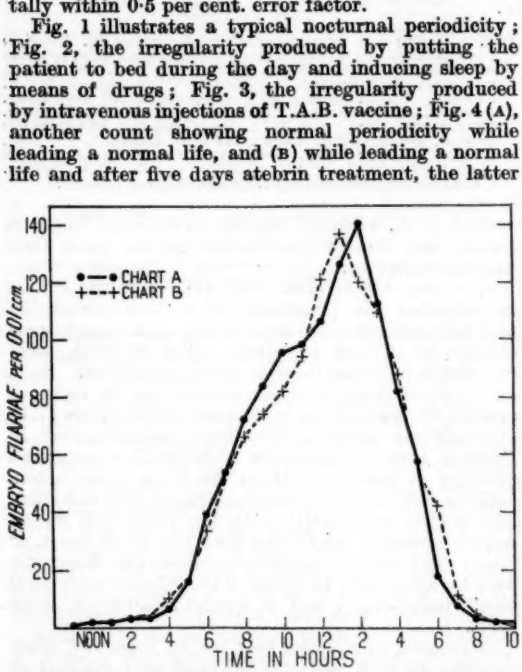

FIG. 4 (A) shows average number of embryo *F. bancrofti* per 0·01 c.cm. of the patient's blood during 24 consecutive hours of normal life and 55 days after gastro-enterostomy. (B) shows the average number in the blood during 24 consecutive hours of normal life and after five days' atebrin treatment (atebrin tablet 0·1 g. three times daily).

having no effect upon the periodicity; while Fig. 5 shows the number of embryo filariæ in the patient's blood on the counts done in 1924 and in 1932.

The total embryo filariæ counts in the report were all carried out on blood obtained by pricking the second or third finger and wiping away the first drop. Although this is the method at present in general use for blood counts and similar investigations, it is well known that pressure on the finger, size of puncture, and the surface tension set up between the capillaries, the blood drop, and the point of the pipette, all contribute to the small error factor which is undoubtedly present. When the blood was drawn up into the pipette, the ordinary wet films were prepared by mixing the blood with a 0·1 c.cm. drop of physiological saline previously placed on the slide and covering with the cover-slip. Counts were made immediately; no variation in embryonic movement was observed whether the specimen was taken at 1 A.M. or 1 P.M. The ordinary thick films were prepared by gently blowing the blood along the lines of an 8 mm. square placed under the slide and then filling in the square with the remainder of the blood. This ensured every specimen being of approximately the same dimensions and the four straight edges rendered counting accurate and rapid.

Animal experiments were carried out for us, at our suggestion, by Dr. H. M. Hanschell. The blood of two

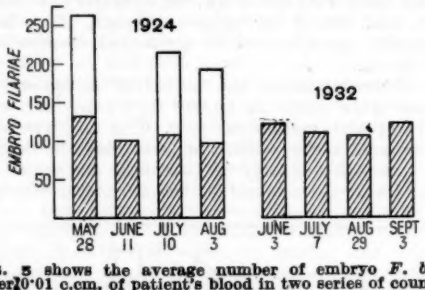

FIG. 5 shows the average number of embryo *F. bancrofti* per 0·01 c.cm. of patient's blood in two series of counts done at an interval of eight years (1924–32). In 1924 the amount of blood used in each count was 20 c.mm. The shaded areas indicate the number of embryo filaria in 10 c.mm. All counts were taken at 11.55 A.M. In 1932 only 10 c.mm. of blood was used for each count. All the counts were taken at 12 midnight. The actual counts per 10 c.mm. in 1924 were as follows: May 28th, 132; June 11th, 100; July 10th, 107; August 3rd, 96; average 109 per 10 c.mm. In 1932 the counts were: June 3rd, 122; July 7th, 110; August 29th, 106; Sept. 3rd, 121; average 115 per c.mm.

guinea-pigs, of 150 g. each, was grouped against human sera. Both were found to be non-agglutinators. One cubic centimetre of human blood (containing approximately 122,000 embryos) was then taken from the median basilic vein of the patient at midnight and injected at once into the heart of one of the guinea-pigs, under ether anæsthesia. The animal recovered from the anæsthetic in four minutes and was as alert as usual. No distress was noted in the following 24 hours.

At 1 A.M. on June 10th, 1932, both guinea-pigs were ether-anæsthetised and 1 c.cm. of blood from the patient (containing approximately 139,000 embryos) was injected immediately into each guinea-pig's heart. Both animals recovered as usual, and no distress was noted. The marginal veins of their ears were pricked after 5 minutes, 10 minutes, 15 minutes, half an hour, and hourly up to 14 hours, but no embryo filariæ were detected. The urine of one of the guinea-pigs was examined, and here again nothing was found.

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ENLARGEMENT OF WEST BROMWICH HOSPITAL.—Sir J. Harris Spencer, the president, last week formally opened new out-patient and casualty departments at West Bromwich District General Hospital. The cost, about £21,000, has been defrayed to the extent of £16,600 by a carnival and a bazaar. Donations and legacies increased the total to £18,373; the balance has yet to be raised. In addition to a covered unloading place for ambulances, there is a perambulator shelter. There are two theatres, the smaller one being for eye operations, and eye, ear, nose, and throat, X ray, and orthopædic departments. All the departments have steel furniture, and there is a canteen for light refreshments.

TYPES OF PNEUMOCOCCI IN POST-INFLUENZAL PNEUMONIA

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The epidemic of influenza in Glasgow which prevailed during December of last year afforded an opportunity of observing the incidence of the types of pneumococci in patients with acute pneumonia admitted to hospital during this period and of contrasting the results with those obtained under normal circumstances.

The following were the general characteristics of the epidemic in the city. An increase of notifications of influenzal pneumonia became noticeable at the beginning of December, reaching a maximum of 117 during the week ending Dec. 17th; deaths certified due to the same cause reached their maximum of 86 during the following week ending Dec. 24th; thereafter a rapid fall occurred in both figures. The highest weekly general death-rate (28·7 per 1000 of the population) was observed during the week ending Dec. 24th. It may be noted that the epidemic was accompanied by a heightened incidence of acute lobar pneumonia at a time when this affection does not usually prevail to anything like the same extent. Deaths certified as due to this cause increased to a maximum of 31 during the week ending Dec. 31st, while those due to acute broncho-pneumonia reached 80 during the week ending Dec. 24th.

Between Dec. 10th, 1932, and Jan. 10th, 1933, dates within which the epidemic occurred, there were admitted to Knightswood Hospital 90 cases of acute pneumonia, of which 60 were typical cases of lobar pneumonia and 30 were broncho-pneumonia or influenzal pneumonia. Table I. gives the distribution of the lobar pneumonias in relation to the frequency and fatality percentages for each type.

Table I.—*Incidence of Types in Lobar Pneumonia*

—	Cases.	Deaths.	Frequency percentage.	Fatality percentage.
Type I. ..	14	1	23·3	7·1
Type II. ..	32	12	53·3	37·5
Type III. ..	7	3	11·7	42·8
Group IV. ..	7	—	11·7	—
Total ..	60	16	—	26·6

These results may be contrasted with those obtained in this hospital during 1932—i.e., Type I., 42·4; Type II., 37·3; Type III., 1·7; Group IV., 18·6 per cent.[1] Again, the general experience of the past three years as given by Macgregor[2] was that these types prevail in non-influenzal times as follows: 38·1, 36·0, 3·9, and 22·0 per cent. in a series of 1077 cases. It was shown by Cowan, Cruickshank, Harrington, et al.,[3] that variations in these proportions may occur. For instance, during the period September, 1931, to April, 1932, the relative incidence was 42, 29, 4, and 24 per cent., Type II. being less prevalent during that winter. It will be apparent from these figures of incidence that the lobar pneumonias of the influenza period were preponderatingly associated with Type II. (53·3 per cent.). Cases of Type I. and of Group IV. were less than usual.

Pneumonias of Type II. were not only more numerous but were unusually severe and fatal. The mortality-rate of 37·5 per cent. is much higher than is customarily experienced. In the various series of cases associated with this type, as quoted by Macgregor for Glasgow hospitals, the mortality varied from 8·6 to 27·8, and was 19·6 in respect of the whole series of 388 cases over the past three years. It thus appears that the virulence of this type was greatly enhanced during the influenza epidemic. A proportion of Type III. infections as high as 12 per cent. is possibly due to lowered resistance during the influenza period. The figures are too small to permit of separation into age-groups, but it may be noted that in the age-group 15 to 25 years there were 12 cases with 6 deaths, an age-period when Type II. pneumonias tend to have a comparatively low fatality-rate.

The behaviour of the different types of pneumococci during influenza has been little observed. Cecil, Baldwin, and Larsen[4] in their study of 2000 typed cases of lobar pneumonia state that "during epidemics of influenza there is always a marked increase in pneumococcus Type IV. pneumonia." The occurrence of Type II. pneumococcus as a prevailing organism in post-influenzal pneumonia appears to be unusual. In the present series the results of the typing of sputa from 30 cases of broncho-pneumonia showed pneumococcus Group IV. to be constantly present in the peritoneal washings of inoculated mice. On the assumption, therefore, that these organisms were responsible for the broncho-pneumonias, the part played by the different types in the 90 cases quoted (consisting of 60 cases of lobar pneumonia with 16 deaths and 30 cases of broncho-pneumonia with 7 deaths) can be expressed as in Table II.

Table II.—*Distribution of Types in 60 Cases of Lobar Pneumonia and 30 Cases of Broncho-pneumonia*

—	Cases.	Deaths.	Frequency percentage.	Fatality percentage.
Type I. ..	14	1	15·5	7·7
Type II. ..	32	12	35·5	37·5
Type III. ..	7	3	7·8	42·8
Group IV. ..	37	7	41·1	18·9
Total ..	90	23	—	25·5

A study of this group of post-influenzal pneumonias suggests that the mortality is due mainly to the invasion by Type II. and Group IV. pneumococci of persons weakened by influenza, with the consequent production respectively of lobar and broncho-pneumonia. It would also appear that when pneumococci belonging to Group IV. cause lobar pneumonia the prognosis is good, whereas in broncho-pneumonia due to organisms of the same group the death-rate may exceed 20 per cent. Another feature of this altered frequency of pneumococcal types is that the high incidence of Type II. infections occurred at a period of the year when cases of adult lobar pneumonia in Glasgow are usually of low prevalence.

Clinically the Type II. infections were severe at all ages. Of the 7 deaths under 25 years, 4 were preceded by signs of toxæmia—the blood cultures taken within 12 hours of death being sterile in two instances and showing 2 and 45 colonies respectively in 2 c.cm. of blood in the remaining two—and 3 were due to septicæmia with a colony count exceeding 1000 per c.cm. The five deaths at the higher ages were all associated with a similar severe degree of septicæmia. In contrast to the Type II. infections, Type III. pneumonia was confined to the upper age-groups. Repeated examinations of the sputum were made, and in three cases the results were verified

by lung puncture. The experience gained in the diagnosis of Type III. pneumonia points to the fact that when the sputum is fresh and typically rusty the result of the first typing is almost invariably correct. The cases of influenzal pneumonia presented the clinical features common to this illness. The severity was in proportion both to the amount of lung substance involved and to the degree of capillary bronchitis present. A constant sign was the expectoration of yellowish muco-purulent sputum. Blood culture in seven severe cases proved negative.

CONCLUSIONS

(1) In a series of 90 cases of acute pneumonia admitted to hospital during the influenza epidemic in Glasgow, 60 were lobar and 30 influenzal pneumonia. (2) The distribution of types in the lobar pneumonias showed an altered frequency percentage of 23·3, 53·3, 11·7, and 11·7, as regards Types I., II., III., and Group IV., as compared with the standard for the city—namely, 38·1, 36·0, 3·9, and 22·0. (3) The incidence of lobar pneumonia during the epidemic was unusually high for the time of the year, its period of maximum prevalence being the months of February, March, and April. (4) The Type II. pneumococcus displayed a much exalted virulence, and was responsible for a case-mortality of 37·5 per cent. (5) Type III. infections occurred in elderly people already weakened by concurrent influenza.

I have to acknowledge my indebtedness to Dr. William Dow, medical superintendent of Knightswood Hospital, and to Dr. A. S. M. Macgregor, medical officer of health for Glasgow.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE

AT a meeting of this section on Feb. 24th, the president, Dr. WILLIAM BUTLER, being in the chair, Dr. G. C. M. M'GONIGLE, medical officer of health for Stockton-on-Tees, related some results of the

Removal of a Slum Population to Modern Dwellings

In 1927, he said, an unhealthy area in the borough was demolished and 710 of the inhabitants were housed on a self-contained municipal housing estate which had been specially built for the purpose. He decided to investigate the state of health of these people during the five years succeeding their translation from bad to good housing conditions. The borough of Stockton-on-Tees had at the 1931 census a population of 67,722. Its chief industries, shipbuilding and engineering, had suffered severely in the industrial depression, but there was also in the borough a good deal of market trade with the surrounding agricultural areas. Unemployment was and always had been rife: only once since 1922 had the percentage fallen below 20 and it was now over 40 for the total male population between the ages of 14 and 65. There were three main types of dwelling-house in the town: modern semi-detached council houses, small inconvenient "middle-aged" houses crowded together in long streets, and old insanitary dwellings, the third type mostly near the river, but also in groups throughout the town. The town council had vigorously carried out a housing policy which comprised the demolition of slums, the building of new houses, and the maintenance of the middle-aged houses. Since the war 1664 council houses had been built. In 1919 various areas of the town were scheduled as unhealthy and others were set aside for reconstruction. A particular area known as the Housewife Lane area was evacuated in the late autumn of 1927 and its 152 families were moved to the Mount Pleasant estate. A similar area known as the Riverside area remained in statu quo ante and provided a control; its population of 1298 consisted of 289 families. The Housewife Lane area consisted of old houses: either small, containing one or two rooms, or large, sublet in numerous tenements. One-room tenements were occupied by 83 families and the sanitary conditions and structure were bad. The Mount Pleasant estate seemed to offer everything that modern sanitary science could demand.

Nevertheless, Dr. M'Gonigle went on, after three years the health of the Mount Pleasant population seemed to have deteriorated. At any rate, the death-rate had increased. The mean crude death-rate per 1000 of population for 1923–27 was 12·15 for England and Wales, 18·75 for the Housewife Lane area, and 22·16 for the Riverside area. For the five years 1928–32 the corresponding figures were 12·2 for England and Wales, 26·71 for the Mount Pleasant estate—i.e., the transferred Housewife Lane population—and 20·45 for the Riverside area. Thus there was an increase of 8·47 per 1000 deaths for the people who had been housed on an excellent modern estate and a decrease of 2·9 per 1000 for those who had remained in the old slum conditions. These were the crude figures, but when they had been standardised in the light of the 1931 census the difference was even greater. The mean standardised death-rate for the Mount Pleasant estate was 33·55 per 1000, an increase of 46 per cent. over the mean standardised rate for the same individuals in the previous quinquennium, whereas the Riverside people and the population of Durham county showed a decrease in the second five-year period. The standardised figure for the Riverside area was 22·78 for 1928–32 and 26·10 for 1923–27.

There was a considerable increase in the birth-rate at Mount Pleasant. For England and Wales the birth-rate for 1923–27 was 18·24 per 1000 of population, and it decreased to 16·27 for 1928–32. The county of Durham, the borough of Stockton-on-Tees, and the Riverside area all showed this decrease, but Mount Pleasant had an increase from 35·08 to 44·25. This increase was not the result of a higher marriage-rate, an increase in illegitimacy, or a larger proportion of first births. It had not been accompanied by an increase of infant mortality, which was considerably higher at Mount Pleasant (117·8 per 1000 live births) than for the county and borough as a whole, but was substantially less than that of the same people when they were in Housewife Lane (172·6 per 1000 live births). The viability of the infants born on Mount Pleasant was no less than that of infants born elsewhere; the neonatal mortality

(26·3 per cent.) compared favourably with that of England and Wales and of the borough (31·5 and 34·2 per cent. respectively). The stillbirth-rate, however, amounted to 61 per 1000 live births compared with 40·5 for England and Wales. Thus the increased death-rate could not be attributed to infant mortality, and the figures showed the main increase to be between the ages of 10 and 45, although there was also an increase in the deaths of children under 10 and of adults over 55. The largest increase was in the 65–75 group, followed closely by the 25–35 and 45–55 groups. Next came the children under 5 and the old people over 75, each with a percentage increase of 9·2. There had been an actual decrease in the age-groups 55–65, 20–25, and 35–45.

The causes of death accounting for the increase were measles, cancer, heart conditions, bronchitis and pneumonia, diarrhœa, nephritis, and puerperal sepsis, but the increase in the last three was trifling. There were decreases in the number of deaths from whooping-cough, diphtheria, cerebro-spinal fever, tuberculosis, appendicitis, and congenital debility. No morbidity and sickness figures were available except the reports of the school medical officers; these showed that the incidence of defects was about the same in Mount Pleasant and Riverside, both areas showing rather more than double the figure for all the elementary school-children in the borough.

Consideration of the causes which might be responsible for the increased death-rate in the Mount Pleasant estate led Dr. M'Gonigle to exclude such environmental factors as housing, drainage, overcrowding, or insanitary conditions. He then carefully investigated the family budgets and the food supplied to the families in an attempt to find the cause of the deterioration in health. The transfer to Mount Pleasant had increased the rent paid by the inhabitants from 9*s.* to 13*s.* 4*d.* per week, but as two families were in some cases sharing a house the mean rent per family per week was now 8*s.* 10*d.* In Riverside area the figure was 4*s.* 10¾*d.* As a result of unemployment the weekly income was strictly limited. The tenants coöperated in the investigation by supplying details of the family budget; 28 budgets were obtained from the Mount Pleasant and 27 from the Riverside area. Of these, 5 of the Mount Pleasant families were employed and 8 of the Riverside families. It was found that the unemployed on Mount Pleasant could only spend 36·7 per cent. of their income on food; a total of 2*s.* 10½*d.* per "man" per week. The food purchased had been analysed and compared with a standard diet. In no case did the first-class protein attain the quantity required by the normal diet. The least deficiency (20 per cent.) was among the employed families in the Riverside area, and the greatest deficiency (about 50 per cent.) among the unemployed on Mount Pleasant. The figures for total protein corresponded. The employed of Mount Pleasant consumed 5·6 per cent. above the normal of fats, but these were for the most part margarine, lard, and bacon fat. The unemployed on Mount Pleasant and Riverside consumed only 66 and 76 per cent. of the normal fat requirements respectively. The consumption of carbohydrates in no case fell seriously below the normal, as white flour, potatoes, and sugar constituted one of the cheapest forms of bulky food and supplied the necessary calories.

There was, Dr. M'Gonigle said, reason to suppose that deficiencies in vitamins and minerals were in proportion to or somewhat greater than the other deficiencies. Calculations suggested that it was not possible to purchase normal quantities of foodstuffs for less than 4*s.* 6*d.* per "man" per week.

In summing up his conclusions, Dr. M'Gonigle remarked that comparison of the two areas revealed no adverse influence operative upon the Mount Pleasant estate other than variations in the composition of their diets. Whether these differences were responsible for the higher death-rate upon this estate might be a matter for conjecture. His investigations had failed to detect any other probable cause.

SECTIONS OF COMPARATIVE MEDICINE AND OF THERAPEUTICS AND PHARMACOLOGY

A JOINT meeting of these sections was held on Feb. 22nd, the chair being taken by Mr. W. HORNER ANDREWS and later by Dr. E. P. POULTON.

A discussion on

Plant Poisoning in Man and Animals

was opened by Mr. W. HORNER ANDREWS. He pointed out that plant poisoning of cattle in this country was much rarer than in the colonies owing to the fact that the recognised poisonous plants had been almost eradicated from our home pastures by long-continued cultivation, such poisonous plants as remained being practically confined to the hedgerows. Many reputed toxic weeds were not as toxic as they were thought to be and probably many other plants were harmful, though not recognised as being so. The most likely reason why cattle feed on poisonous plants was the lack of more appropriate food. The most difficult cases of poisoning of cattle by plants were those in which there was a considerable latent period between the ingestion of the plant and the onset of the symptoms of poisoning. In poisoning by *Senecio latifolia* the latent period was 96 days, by which time an animal might long have ceased to eat the plant and owners would be unlikely to associate it with the symptoms observed. Chronic interstitial pneumonia was, in Mr. Andrews's experience, a typical sequel to poisoning by *Crotalaria dura*, which opened a way to secondary bacterial infection. He referred also to a South African plant which contained two poisonous principles, one a cyanogenic glucoside capable of killing a beast in an hour, and one a toxic protein, which was liable to set up three days later acute gastro-enteritis in the animal if it survived poisoning by the hydrocyanic acid.

Sir WILLIAM WILLCOX said that plant poisoning of human beings in this country was practically restricted to children and to a comparatively small number of ignorant or mentally deficient adults. He drew attention to the different degree of toxicity manifested by the same poison in different animals, instancing the insensitiveness of rabbits to belladonna or to aconite and the great tolerance to strychnine shown by the horse and ox, compared with that shown by man; on the other hand, the frog was so sensitive to strychnine that the physiological test of tetanic convulsions in a frog was much more reliable than even the very delicate chemical tests for this alkaloid. As an example of delayed action of poisons in human beings he quoted the consumption of imperfectly matured tobacco which was liable to set up thrombo-arteritis obliterans, leading to gangrene and most probably amputation. He described the effects and uses of a number of poisons, including the poisoning of fish by means of picrotoxin or of Dherris root.

Dr. PAUL HAAS drew attention to the difficulties in the classification of poisonous plants. While some families, as for example, papaveraceæ, solanaceæ,

ranunculaceæ and leguminosæ included plants such as the poppy, belladonna, aconite, and laburnum rich in alkaloids, other families like labiatæ or rosaceæ did not contain any alkaloid-bearing plants, though the rosaceæ contained a great number of plants containing glucosides. Remarkable differences occurred between closely related species of the same family as in the oriental poppy *Papaver somniferum*, which contained some 25 alkaloids—mostly poisonous—while the common field poppy *Papaver rhœas* contained only one alkaloid, rheadine, which was practically innocuous. The effects of climate or external conditions upon the same plant grown in different parts of the world was illustrated by the common hemp, *Cannabis sativa*, which, when grown in India, was the source of hashish, while the same plant grown in this country produced only traces of this material. Linseed, again, when grown in hot climates contained considerable quantities of the cyanogenic glucoside linamarin, while very much less of this substance was contained in plants grown in cold damp climates. Cultivation also led to loss of poisonous glucoside in the wild bitter almond or the Burma bean. Attempts to explain the significance to the plant of poisonous alkaloids were also beset with difficulties; whilst the seeds of nux vomica, belladonna, or taxus were rich in alkaloids, the seeds of the oriental poppy were free from them, although the latex obtained from the fruit capsule was very rich in these bodies.

Dr. E. P. POULTON spoke of the occasional toxicity of honey.

Mr. J. A. NICHOLSON gave a summary of his work on the feeding of rabbits and sheep on different species of buttercup from which he concluded that these were practically innocuous, though the expressed juice of *Ranunculus acris* or *R. repens* injected into the stomach in increasing doses caused gastro-enteritis followed by death, without however the exhibition of symptoms of poisoning by a highly toxic substance.

Mr. J. T. EDWARDS gave an account of the use in India of *Abrus precatorius* for the criminal poisoning of cattle for the purpose of obtaining the hides.

SECTION OF OBSTETRICS AND GYNÆCOLOGY

A MEETING of this section was held on Feb. 17th, when Dr. ELIZABETH HURDON read a paper on

Radium Treatment of Carcinoma of the Corpus Uteri

She said that radium had been used for many years as a palliative measure for the treatment of cancer of the body of the uterus but surgery had generally been looked upon as the treatment of choice for most cases. A few clinics had systematically used a combination of radium therapy and surgery. The combined figures from the literature on about 1500 cases treated by hysterectomy gave the five-years cure rate as 43 to 65 per cent., the rate of operability having been 75 per cent., and the primary mortality-rate from 3·3 to 9 per cent. Radium therapy alone had been used for 20 years. The combined results of nine leading clinics on a total of 740 cases showed a five year survival-rate of 32 per cent. on all cases and 42 per cent. for the operable cases only. The immediate risk was usually looked upon as nil, but might be as much as 3 per cent. With modern technique the five year survival-rate of operable cases was given as from 70 to 80 per cent. In the Marie Curie Hospital 68 cases had been treated since October, 1925, 700 cases of cancer of the cervix having been treated during the same period. Only 21 corpus cases were treated more than three years ago and only seven more than five. Of these, four were living and well. The one operable case had died at the end of five years from cerebral hæmorrhage and the two inoperable cases had died of metastatic cancer with no sign of growth in the uterus. Of the total cases, 46 were living.

Technique.—A microscopic examination was made in all cases. Radium was given in three applications of 22 hours each, at one and two weeks' interval. Both intra-uterine and vaginal applications were made. A central applicator, containing radium tubes in tandem was introduced into the uterine cavity so as to extend the entire length to within 1 cm. of the external os. An empty rubber cuff filled the cervical canal below the applicator. In addition two small applicators were passed up into the uterine cornua. The radium was distributed so that all intra-uterine tubes contained 8 mg. of the element to each cm. of active length. A vaginal plaque was placed high up in each lateral vaginal fornix, containing 20 mg. of the element in two out of the three treatments. The radium tubes were screened with 1 mm. platinum and 1·5 mm. rubber. The standard total intra-uterine dose was 4300 to 4800 m.e.h., the vaginal dose 1760 m.e.h. Two-thirds of the standard dose was given for a small senile uterus. One primary death had resulted from giving the maximum intra-uterine dose to a small senile uterus, from necrosis of the uterine wall, and septic peritonitis. In three cases stenosis of the cervix, producing pyometra, had proved a late complication. This result would not follow with present-day technique.

Dr. Hurdon stated that fibroids interfered with effective radiation and she regarded tubo-ovarian and other pelvic infections as contra-indications. She was of opinion that the results of irradiation treatment would prove to be equal to surgical results and that combined radium therapy and external radiation was the best method.

DISCUSSION

Mr. JOHN BEATTIE compared the results of two groups of cases of operable carcinoma of the body treated respectively by combined radiation methods and by hysterectomy at St. Bartholomew's Hospital. The survival-rate was three times as high in the group treated surgically as in the radiation group, but the dosage of radium was admittedly inadequate. He discussed the various types of carcinoma with special reference to their sensitiveness to radiation, and pointed out that the majority of growths of the proliferative adenocarcinomatous type were heavily infected. The risk of inserting radium in these cases was great.

Dr. J. H. HANNAN emphasised the difficulty which sometimes arises in the histological diagnosis of fragments removed by curetting. While this uncertainty existed caution was necessary in assessing the results of radium treatment. Inevitably a certain proportion of cases classed as malignant were, in fact, innocent.

Dr. HELEN CHAMBERS discussed the histological grading of the 68 cases treated at the Marie Curie Hospital. As extensive curetting was not encouraged, the amount of tissue available was small and she was not prepared to accept this as a fair sample of the growth in the uterus. The data was insufficient to determine whether the histological grading had any bearing on prognosis.

Dr. MALCOLM DONALDSON thought that there were so few cases of carcinoma of the body which were technically inoperable and therefore suitable for radium treatment that all London gynæcologists should agree to give a trial to the same radiological technique. Discussing Dr. Hurdon's methods he doubted if the small containers which were said to be placed in the cornua of the uterus actually got into that position. An X ray photograph would decide that question. He considered that the right treat-

ment when possible was to do a pan-hysterectomy followed by high voltage X ray therapy.

Dr. EVERARD WILLIAMS maintained that fruitful results in radium treatment of cancer of the corpus would depend on further study of the grades of malignancy in relation to their radio-sensitiveness on the basis suggested by Prof. Ewing. In our present state of knowledge he would prefer to treat the adenoma malignum type by radiation and other types of hysterectomy, preferably by the vaginal route.

Mrs. IVENS-KNOWLES was not convinced that radium treatment was suitable for all cases. She referred to a case in which it had been necessary to resect a coil of small intestine which was adherent to the fundus of the uterus. The patient was alive ten years afterwards. She favoured vaginal hysterectomy in cases of extreme obesity, advanced age, or chronic bronchitis in which abdominal operation was contra-indicated.

Miss L. MARTINDALE, in reviewing a series of 56 of her own cases treated between 1920 and 1932, found that she had performed panhysterectomy on 41 of these (73 per cent.) and had treated the remaining 15 (27 per cent.) with radium. In 18 of the hysterectomy cases she had followed up treatment with intensive X ray therapy with a view to preventing recurrence. In 11 of the operated cases radium had been used in addition, mainly for recurrence in the vaginal vault or in the lower end of the vagina.

Mr. T. G. STEVENS asked Dr. Hurdon to state on what grounds she had classified her cases into "operable" and "inoperable." He had met few cases of carcinoma which were technically or clinically inoperable.

REPLY

Dr. HURDON, in reply, admitted the difficulty of determining inoperability in cancer of the corpus cases. The only cases classed as inoperable were those in which an unsuccessful laparotomy had been performed or in which massive fixed growth involving the cervix made removal by surgery clearly impracticable. In reply to Mr. Beattie, who had referred to papillary growths already infected, she stated that her practice was to insert the usual dose after preliminary douching with flavine lotion. With the exception of slight rises of temperature there were no ill-effects.

PATHOLOGICAL SPECIMENS

Dr. M. W. BULMAN showed four specimens: A section of curettings from a woman aged 29, showing tuberculous endometritis; a specimen of sarcoma of the uterus, ; a specimen of unruptured interstitial tubal pregnancy; and a specimen of tubal pregnancy retained for two years and eight months.

MEDICAL SOCIETY OF LONDON.

Undulant Fevers in Non-tropical Countries

AT the meeting of the society held on Feb. 27th, the president, Sir JOHN BROADBENT, occupying the chair, the subject for discussion was the increased frequency of fevers of the undulant type in non-tropical countries, and its relationship to infection by cow's milk.

Dr. P. H. MANSON-BAHR, in opening the debate, said the term "undulant fever" was a convenient one under which to embrace several clinical pyrexias which were due to closely allied organisms. Practitioners in tropical medicine were familiar with these clinical variations in fevers due to biological strains of the same parasite; and fevers of the undulant type were all due to organisms of the same bacteriological group. Applied to this type of disease the term "Malta fever" was a misnomer, as it was to-day commoner in other countries than in Malta, and inhabitants of that island resented the implied stigma. In man the following varieties of undulant fever could be recognised:

(1) The original type contracted from goat's milk, the causative organism being *Brucella melitensis*.

(2) The localised aberrant type, such as was found in North Africa, contracted from goat's milk and due to *Brucella para-melitensis*.

(3) The abortus type, which appeared to be world-wide, but was especially prevalent in France, Denmark, Great Britain, and the United States in recent years. The causal organism here was *Brucella abortus*, and the origin of infection in man seemed to be cow's milk. In pigs especially a form was found which was due to *Brucella bronchosepticus*.

In 1905 the close association of undulant fever with the presence of goats was proved by Sir Themistokles Zammit, and soon thereafter the greater number of infected goats in Malta were destroyed, and the drinking of unsterilised goat's milk was entirely forbidden. This resulted in the almost complete disappearance of the disease.

In typical undulant fever there were wide variations in the character and undulations of the temperature chart. The temperature might rise to 105° or even 106° F. One undulation might last three months, and the fever might last for a year or longer, but seemed eventually to subside. It might be intermittent, and so lead to a diagnosis of tuberculosis. Usually the temperature was highest between 4 and 6 P.M., a point of differentiation from fevers of septic origin. Arthritic pains, with effusions, flitting from one joint to another, had led to confusion with influenza. But the pain was, in some cases, limited to fascias and bony prominences exposed to pressure. The associated night-sweats were more profuse and exhausting than those of any other disease. In the melitensis form the spleen was generally enlarged, but the absence of splenomegaly at an early stage should not negative the diagnosis. Hæmorrhages from nose or gums and hæmaturia were common, also purpuric skin hæmorrhages. Complications included neuralgias and rheumatic pains, while among the sequelæ were abscess, orchitis in the male, mastitis in the female, parotitis, and neuritis. In women the infection caused dysmenorrhœa and menorrhagia, and certainly predisposed to abortion and premature labour.

With regard to the abortus type, Dr. Manson-Bahr pleaded for a more appropriate name, for the disease was not confined to the female and did not necessarily imply liability to abortion. He suggested "undulant fever of abortus type," or "Bang's disease." The infection produced a distinct disease in domesticated animals, was communicable to man, in whom it could cause a fever almost exactly resembling that of the melitensis type. It had now become very common in high-bred cattle herds, especially when they were stable-fed. The organisms occurred in the vaginal discharge and in the uterine exudate, and they were excreted in the milk for weeks and months. In Washington 12 to 14 per cent. of commercial milk was thus infected; in Chicago 30 per cent. Often the organism had been found in bulls' genitalia, so that male animals could transmit the infection to the herd.

The diagnosis was readily made by serum agglutination, which occurred in dilutions from 1 in 100 to 1 in 10,000; the agglutinins were also present in the milk of infected cows. An intradermal test had been found useful in diagnosis. The common method of prevention in veterinary practice consisted in

isolating infected animals and producing active immunisation in non-pregnant animals with living cultures, after which the abortion-rate came down to about 6 per cent. For pregnant animals immunisation was attempted by means of killed cultures. Undulant fever of the abortus type had now been reported in Italy, U.S.A., France, Denmark, Sweden, Canada, Germany, Holland, Austria, Switzerland, Palestine, and Poland.

The leucocyte count in abortus was distinctive; there was usually a slight leucopenia, with a relative increase in the lymphocytes. Abortus infections ran a much milder and shorter course in man than did those of the melitensis type. Dr. Manson-Bahr referred also to what he termed "sub-clinical cases"—i.e., those which had small rises of temperature which would not be suspected unless four-hourly readings were taken. The recovery of the organism by blood culture was the most satisfactory method of making the diagnosis, but the specimens should be taken fresh from the patients and inoculated into a sufficient quantity of medium, at body temperature; sometimes ten days were needed to allow the organism to develop.

With regard to treatment, Dr. Manson-Bahr did not feel on secure ground. He did not believe in starving patients; they should be well fed on an easily assimilable diet, with adequate fluids to promote sweating. A combination of phenacetin and aspirin alleviated the joint pains. For insomnia he ordered warm sponging, with bromides, allonal or medinal. He had not traced any marked effect from the use of vaccines. Dr. Miller had found that three or four injections of intravenous T.A.B., in doses of 50 to 150 million organisms, cut the fever short, and this was well worth trying.

THE PATHOLOGY OF THE CONDITION

Prof. G. S. WILSON referred particularly to the pathological side, using the term "undulant fever" in a general way, owing to the similarity of the causal organisms. The bovine abortus type would not grow under ordinary aerobic conditions; the addition of 10 per cent. of CO_2 was needed. He had collected records of 136 cases of undulant fever in which the diagnosis had been made by agglutination; in 12 it was confirmed by cultivation from the blood or urine or fæces. Ninety-two of these cases occurred in England, 18 in Scotland, and a few in Wales and Ireland. It occurred mostly between the ages of 20 and 50, and males were affected about twice as frequently as females, a curious preponderance for a milk-borne infection. Ninety-seven of the 136 cases occurred in towns. In Denmark two-thirds of the cases were related not to consumption of milk so much as to direct contact with infected cattle—i.e., on farms and dairies, but in this country the largest number of cases occurred among the clerical, medical, and engineering professions. The disease appeared to be more common in this country than it was, though the incidence could be determined only indirectly.

With regard to mode of infection, most of the subjects admitted drinking milk only when closely questioned, their first answer being a denial. Often the infection was incurred on holiday, when milk was drunk at a farmhouse. Cream was often rich in the organism. Butter was not likely to be a cause, as 90 per cent. was imported from abroad, having been pasteurised, a process which destroyed the bacillus. Hard cheeses were not the source of infection incriminated, but soft cheeses, which were usually eaten soon after manufacture, might carry infection. On the other hand, milk and cream were heavily infected. In recent epidemics, in which the CO_2 technique was used, a high proportion of raw milk was found infected with the *Br. abortus;* in Cardiff it was 34 per cent., in some other districts slightly less. Among the 136 cases all the victims had been drinking raw milk. In the large towns in this country 70 per cent. of the milk sold was pasteurised, in London 95 per cent., and comparatively few cases occurred in these towns, and those mostly among people who had recently come from the country. It used to be argued that if the disease was due to milk it should be commoner than it was; but that argument was based on the idea that the organism was the only essential cause. It was now realised that the predisposing factors were equally important, and the organism might gain access to the tissues without producing clinical symptoms; the disease might be latent, as might tuberculosis. Latent infections were very common in people who came a good deal into contact with abortus, as shown by figures recently collected. For instance, among Liverpool slaughterers instead of the usual 1·4 per cent., 12 per cent. agglutinated abortus. At the recent Veterinary Congress at Folkestone, Prof. Wilson, having persuaded 98 veterinarians to allow him to examine their blood, found that 20 per cent. contained agglutinins to abortus. In diagnosing undulant fever it was important to take both the clinical and the serological evidence together; it was not justifiable to make a diagnosis on the laboratory findings alone.

THE CLINICAL ASPECT

Dr. THEODORE THOMPSON confined his remarks practically to the clinical aspect. In England the first clinical cases were described by Box and Bamforth, in 1925 and 1927 respectively. The incubation period was about the same as that of Malta fever—i.e., 5–15 days—and the symptoms resembled a mild attack of Malta fever. In a very severe fatal case of ulcerative endocarditis *Br. abortus* was grown from the blood. The most striking clinical feature was the continuance of pyrexia without obvious cause; its wave periods might last from one to four weeks. The patient might feel well throughout, the chief complaint being profuse sweating, often accompanied by an unpleasant odour of the skin. Melæna had been noted, but was not at all common. In pregnant women, undulant fever frequently led to abortion. The blood condition in the disease was very important; a mild anæmia was present, but the most striking feature was a marked diminution in the white corpuscles, which might not be more than 4000 or 5000 per c.cm. *Br. abortus* was nearly always agglutinated in a higher dilution than was *Br. melitensis*. The melitene intradermal reaction was useful in diagnosis; inoculation of the organism into the skin substance produced a large pink wheal, which continued for two or three days.

The differential diagnosis was mainly from typhoid, paratyphoid, rheumatic fever, general tuberculosis, endocarditis, Hodgkin's disease, influenza, and infective arthritis. Treatment did not appear to be of avail in a large number of cases; the disease seemed to run its course uninfluenced by drugs or vaccines. Sweating could be relieved by a pill containing gr. ¼ of belladonna.

VETERINARY EXPERIENCES

Mr. L. E. W. BEVAN remarked on the parallelism between many human and animal diseases, and spoke of his experiences as a veterinarian in Southern Rhodesia. Having read the work of Alice Evans, it occurred to him in 1921 that some of the mysterious cases of pyrexia of unknown origin which came into

the Salisbury Hospital might be the result of abortus infection. He therefore obtained serum from cows in Kenya Colony, and the Royal Veterinary College, London, and found that the serum of one particular patient agglutinated all of them. Since then some 300 cases of the kind had been admitted into Rhodesian hospitals. The diagnosis was made by serum agglutination, and sometimes by means of the abortiscope. In Rhodesia it was not always possible to obtain a laboratory diagnosis. The subjects were usually severely ill, and some had died of the disease. No remedy had been found. The subjects of the disease were often robust men. In this country bovine abortion was astonishingly prevalent. Contact with infected animals must be a very important means of infection, for veterinarians as a class did not claim that their favourite beverage was milk. In the general population of England and Wales there must, he thought, be some degree of resistance, tolerance or immunity to the organism, otherwise the incidence would be far greater.

The PRESIDENT said that some such resistance must be postulated. Recently he read in a paper communicated to a pathological congress in Paris in 1931 that in France undulant fever was caused more commonly by sheep and less frequently by goats. It had been stated that in America cases had been treated by the direct transfusion of 500 to 700 c.cm. of blood, and that thereafter the temperature fell in from one to three days.

Dr. H. L. GLYN HUGHES asked what was the duration of the shortest known and proved case.

Dr. E. CREED said that last August he had seen a man who had been ill for ten days, and was suspected to be a case of typhoid fever, but the Widal reaction was negative. Abortus agglutinations were positive in dilutions of 1 in 50. Temperature fell on the day he saw the patient, the tenth day of the illness, and there had been no feverish return.

REPLY

Dr. MANSON-BAHR said that in the Pyrenees and adjacent regions herdsmen and others associated with sheep rather than goats, and this might explain the attribution of cases to sheep. There was considerable evidence that the disease was not by any means solely contracted from the drinking of goat's milk. Some cheeses were made from sheep milk.

Prof. WILSON attributed great importance to the existence of the disease in a latent form; the presence of the causal organism in the human body was not always accompanied by detectable symptoms.

CORRIGENDUM.—In the reported remarks of Mr. C. A. Scott Ridout on p. 305 of THE LANCET for Feb. 11th, the 15th line should read: "In five years, from 1927–1931 he operated on 196 cases in private practice apart from hospital cases, and four patients died." He was speaking from 24 years' experience entirely apart from the number of cases quoted.

REVIEWS AND NOTICES OF BOOKS

Workmen's Compensation: Its Medical Aspect

By Sir JOHN COLLIE, C.M.G., D.L., M.D. London: Edward Arnold and Co. 1933. Pp. 160. 7*s.* 6*d.*

To condense the complicated law and practice of Workmen's Compensation into 160 pages, everyone of them lucid and readable, is no mean feat. It has been accomplished ably by Sir John Collie. As he points out, compensation now forms a very large part of the working expenses of industry, and there has been a steady yearly rise in the proportion of employees compensated and also in the amount paid in each case. In the mining industry in 1930 the cost to the employer per person employed in the whole industry was over £3, representing a charge of 2½*d.* on every ton of coal raised. Public sympathy naturally tends to favour the injured workman, and it is particularly desirable that the doctor's attitude should be judicial, and his report of real assistance to the employer, or to the court if the matter comes to litigation. The author reminds us that he has earned the gratitude of the profession by establishing in the courts some minor but important points of medico-legal practice—e.g., that the employer has the right to choose what medical examiner he pleases, that the workman's solicitor may not attend the examination, and that the examiner cannot be obliged to conduct his medical examination in a solicitor's office. He gives much useful information on the art of disentangling knotty problems, such as that of "partial disability" or the "novus actus interveniens"—i.e., where some new disaster has intervened giving a "fresh origin to subsequent consequences." A valuable chapter describes those industrial diseases scheduled in the Act as entitling the sufferer to compensation if contracted in the course of employment. There is much useful advice on the subject of which Sir John Collie is an acknowledged master—the detection of malingering. His very enthusiasm may prove something of a snare for the novice in the medico-legal field, who is apt to get the facts a little out of focus. Experience shows that there is need to distinguish carefully between the honest man who is not so ill as he thinks he is, a very common phenomenon, and the deliberate malingerer, who is much more rarely encountered. A patently suspicious attitude on the part of the examiner, or a tactless zeal in practising the traps so ably described by Sir John Collie, may easily harden resistance and create the very condition he sets out to diagnose. Applied with sympathy and humanity, however, the principles set forth in this book should prove an invaluable guide in a difficult by-path of medicine.

The Common Cold

Vol. VIII. of the Annals of the Pickett-Thomson Research Laboratory. By D. THOMSON, O.B.E., M.B., Ch.B., D.P.H., and R. THOMSON, M.B., Ch.B. London: Baillière, Tindall and Cox. 1932. Pp. 738. £3 3*s.*

THIS prodigious volume presents in an orderly form the contents of 2000 papers on the common cold, which appear to include everything of consequence which has ever been written on this subject. The system which has permitted this compilation is unusual, if not unique, since for years past all papers appearing in what must be a large number of journals have been classified by the authors, and the resulting collection now includes nearly 500,000 original papers and abstracts, so arranged that it would apparently be possible at once to assemble the material for a comprehensive monograph on any medical subject. This is a staggering thought. Whatever the merits of the cement (if the authors' own observations may so be described) with which

this gigantic mosaic is put together, a great service has been performed in providing such a work of reference.

Although this volume is chiefly concerned with the bacteriology of the common cold, it includes considerations of the anatomy and physiology of the upper air-passages, of factors predisposing to infection, complications and sequelæ of colds, and their treatment and prevention. Each subsection concludes with the authors' own critical observations on the material presented, and their main thesis, based largely on a study of the nasal flora in health and during colds in their own persons and those of their colleagues, is that many colds are clearly attributable to ordinary bacteria. That this proposition should again be stated when there is a tendency entirely to disregard the ordinary flora in the search for a virus is a good thing; what would be better than the presentation of both hypotheses from different quarters is a study of the problem from both standpoints simultaneously by the same individuals, a thing which hitherto appears never to have been done. The authors' studies are based on cultures using Crowe's medium, and a series of excellent photographs illustrates the colonial appearances observed. There are very few references to the examination of direct films of the exudates cultivated, and no other means of judging the numbers of bacteria in the material examined are available; some form of quantitative technique would enhance the value of these studies. While comment throughout the book is mainly balanced and judicial, there are occasional quite unjustified assumptions, and the strictures passed on horses, domestic animals, and vermin on the last page, including the fantastic assertion that dogs in towns should be provided with special water-closets, would reflect seriously on the whole volume if it could not be supposed that they were written in a moment of elation at the conclusion of a colossal task. There is, of course, a full list of references; there are also very full indexes, and the pages being exceptionally large as well as numerous, the volume may be computed roughly to contain half a million words.

Le Genou

Anatomie chirurgicale et radiographique. Chirurgie opératoire. By ANTOINE BASSET, Professeur agrégé à la Faculté de Paris; Chirurgien de l'Hôpital Beaujon. Paris: Masson et Cie. 1932. Pp. 187. Fr.45.

THIS monograph on the knee-joint is one of a series on which Dr. Basset is working; each volume is to deal with the surgical and radiographical anatomy and the operative surgery of a separate joint. This, the first to appear, is clearly written, complete in detail, and beautifully illustrated. Thirteen pages are devoted to a description of the normal external, or topographical, anatomy which, as the author says, is the surgeon's guide to the internal structure of the joint. The signs and symptoms of disease do not come into the scope of the work, but every method of approach used in opening the joint and every incision is very carefully described and illustrated. A section is included on traumatic surgery, which deals with fractures of the knee, injuries of the menisci and of the cruciate ligaments, and their operative treatment. Another section deals with the various methods of simple arthrotomy in the treatment of hæmarthrosis, hydrarthrosis, and pyæmia of the knee-joint. For the last-named condition in its early stages Dr. Basset advocates arthrotomy, evacuation of the joint contents, lavage and closure without drainage; he believes drainage to be absolutely contra-indicated in early cases, but discusses in great detail the drainage methods he prefers for more advanced cases. The major operations, particularly arthrodesis and excision, are clearly described, the operation of the author's choice being first set out and followed by important modifications and alternatives.

The work will appeal to all who are interested in the practical surgery of joints.

Acidosis and Alkalosis

By STANLEY GRAHAM, M.D., F.R.F.P.S., Leonard Gow Lecturer on the Medical Diseases of Infancy and Childhood, University of Glasgow; and Visiting Physician, Royal Hospital for Sick Children, Glasgow; and NOAH MORRIS, M.D., B.Sc., D.P.H., F.R.F.P.S., Lecturer in Biochemistry to the University of Glasgow; and Biochemist to the Hospital. London: E. and S. Livingstone. 1933. Pp. 203. 7*s.* 6*d.*

PROGRESS in the study of changes in acid-base equilibrium and of their clinical importance has been so rapid, and the literature so widely scattered, that it has been difficult for the clinician to grasp and apply at the bedside the new knowledge. In this book the modern views on the regulation of acid-base equilibrium are clearly and succinctly outlined, while the various morbid conditions which are liable to disturb it are discussed in so far as they are at present understood, and attention is directed to the appropriate therapy. The approach is essentially clinical. The authors have concerned themselves primarily with disturbances of acid-base balance as they occur in childhood, since it is during this period that changes arise most readily and are of the greatest importance. The book would have been even more valuable if rather more attention had been paid to such surgical conditions as intestinal obstruction and paralytic ileus; pyloric stenosis, however, is very fully considered. The vexed questions of the biochemical treatment of gastro-enteritis of infancy and the significance of ketosis are clearly discussed, though the paragraph devoted to use of a ketogenic diet in the treatment of chronic pyuria is too brief to be of practical value. There are a few minor omissions, probably unavoidable in a volume of this size, but the book must be commended as of high practical use.

The Arches of the Years

By HALLIDAY SUTHERLAND. London: Geoffrey Bles. 1933. Pp. 293. 10*s.* 6*d.*

THIS is a loosely put together series of biographical incidents with a somewhat fantastic title, and all the chapters have similar adornment—"Arcadia" means the Highlands, "Exiled" means a visit to Spain upon the directions of a father, the "Gate of the Sun" describes Seville, and "Blood and Sand" records a bull-fight. The impression left is unfortunate because some of the occurrences related or reactions received can hardly be described as out of the common and demanding picturesque captions. But Dr. Sutherland's adventure as an amateur toreador was well worth recording; he may be congratulated upon his courage and his luck. Undoubtedly the many friends and acquaintances of the author will like to have a copy of the work, which is probably not expected to make a more general appeal than do any of the numerous personal reminiscences which are now published. It is a lively and well-written book.

THE LANCET

LONDON: SATURDAY, MARCH 4, 1933

CHILDREN IN THE CURRICULUM

AT the winter session of the General Medical Council last November, when the reports of the examination committee and of the inspectors of the qualifying examinations in medicine, surgery, and midwifery were presented, an important discussion took place[1] on a recommendation regarding the place of infant hygiene and diseases of children in these examinations. The recommendation finally adopted was "that in the final examination there should be a test of the candidate's knowledge of infant hygiene and of disease in children." In the original form the terms of the recommendation were more drastic—the word "always" was included, and the test was to be "both written and clinical"—but in deference to criticism these terms were dropped out of the final resolution. The final form, although vague, is really as comprehensive as the original draft, and it opens the way for further advance in medical teaching. In this recommendation the General Medical Council may be said to have granted a new and enlarged charter to pædiatrics. This advance has been gained by the special study of the subject going on all over the world, and by the growing conviction of its importance in medical practice. In this country the General Medical Council has watched and fostered the extension of teaching of the subject since its resolutions on medical education in 1922, and the resolution of 1932 is largely due to the concentration and pertinacity of the inspectors. Both in their individual and general reports they have insisted again and again, and in strong terms, on the importance in medical practice, and therefore in medical teaching, of the two aspects of health and disease in children. Dr. J. S. FAIRBAIRN and Dr. WARDROP GRIFFITH, whose names appear in the printed reports, now bound up in a volume,[2] as the inspectors in midwifery and medicine who visited the medical schools of Great Britain and Ireland from 1930 to 1932, were dealing with the qualifying examinations in these subjects and not with the teaching. They commented adversely upon the rare appearance of questions about children in the written papers, and upon the almost entire absence of infants and children in the clinical material presented to candidates at examinations. And their recommendations were much stronger than that of the examination committee, for they asked for a separate written paper, and a special clinical examination, to be conducted by those engaged in the teaching of pædiatrics. But their far-reaching proposals really lie hidden in the womb (as Dr. FAIRBAIRN might say) of the 1932 resolution; and in the fullness of time they will be brought forth.

There is a good deal of misunderstanding and confusion as to what is meant by "infant hygiene," although the term "diseases of children" seems clear enough. To make matters worse, these subjects are presented to us in the inspectors' reports as minor appendages of the great subjects of midwifery and medicine. But they are in fact not separate subjects, but parts of one subject: the clinical study and management of children in health and disease. The subject "diseases of children," as taught here and all over the world, and as presented in medical text-books, has always included both aspects of the subject; but it is taught in hospitals for sick children, and as the time allotted is short the clinical teaching is largely concerned with disease. Dr. FAIRBAIRN'S plea for more teaching in the care and feeding of young infants at maternity hospitals therefore deserves serious attention; for it is only in maternity hospitals and in postnatal clinics for infants that the necessary clinical material of healthy infants is available. The subject, although one and undivided, can only be completely and practically studied in two separate institutions. The term "infant hygiene" is misleading, partly because British medicine has never taken kindly to the word hygiene. "Pædiatrics" is better; its meaning covers the whole subject, but it too has a strange and foreign sound about it. Dr. FAIRBAIRN wishes the teaching of midwifery and infant hygiene to be linked together; we should then have "obstetrics and pædiatrics," an unpleasant conjunction of sounds—"jangled, out of tune, and harsh." The University of Edinburgh has chosen for the subject the title "child life and health," which is good English and includes in a simple phrase the two parts of the subject, health and disease, in their broadest sense. While no doubt the name of the subject will be determined by usage, it should express the unity of this large and important subject; as the side of health (or hygiene) is bound to play a large part in its development, it would be well for the word health to appear in the title.

A discussion which began with examination went on to the more important question of teaching. There is no use in calling for a stricter examination in what is called infant hygiene, as well as in diseases of children, if the time allotted for teaching is not extended. And probably the demand for more thorough examination will have a more immediate and beneficial reaction on teaching than on the actual examination test. The average time allotted to the teaching of this subject in Great Britain and Ireland is about 60 hours, a period much shorter than in the American schools. It is possible in that time to cover a good deal of ground by means of lectures, but not to familiarise the student with the clinical examination of sick and healthy children. The British Pædiatric Association with wise prescience debated the whole subject, both of teaching and examinations, at their last annual meeting, and sent to the General Medical Council four unanimous resolutions,

[1] See THE LANCET, 1932, ii., 1276.

[2] Addendum to the Minutes of the General Medical Council for 1932. Reports of the Inspection of Qualifying Examinations 1930–32. London: Constable and Co. Pp. 700. 10*s*.

corresponding in their general tenor to those of the inspectors, although expressed in more cautious and peacefully persuasive terms. The Association concentrated their attack at the examination end, and their resolutions no doubt contributed to the advance secured at the November council meeting. The Association will now be well advised to direct their attention to the courses of instruction, and to take full advantage of the opportunity given by the General Medical Council to revise and extend the teaching. A door has been unlocked; it is for the teachers in pædiatrics, by tact and patience and judicious pressure, to get the door open.

AEROPLANES AND YELLOW FEVER

FASTER transport may bring us nearer to our neighbours, but it also brings us nearer to our neighbours' diseases. The development of long-distance flying and regular air routes has opened up obvious possibilities of the introduction of disease by air, and of late years the medical profession in this country has been invited by a number of writers[1] to consider the problems likely to arise. The danger is twofold. Either the time taken in transit may be so much reduced that a person may arrive in a country while incubating a disease which would normally have developed during the journey; or, where diseases are spread by animal vectors, the mosquito, fly, tick, or even rat in question might be conveyed to a fresh area safely and rapidly by aeroplane or airship. The second possibility has received some support from experiments carried out in the transportation of mosquitoes by air between Miami (Florida) and San Juan (Porto Rico).[2] Out of about thirty marked insects liberated in the cabin of a large passenger aeroplane from 3 to 13 in the different experiments were recovered alive at the end of ten-hour journeys of 1250 miles, with three stops, at which crews were changed and passengers and baggage were transferred.

In the case of Great Britain, with the possible exception of virulent small-pox, the danger of a serious epidemic from the introduction by air of cases or vectors of any of the major infectious diseases is at present almost negligible; but it is far otherwise with large areas in the tropics. Malaria, plague, cholera, and above all yellow fever, have here to be considered; and it is especially in connexion with the last-named that fears have been expressed. Calamities are prophesied if the disease is taken from West to East Africa and thence into India,[3] and Sir MALCOLM WATSON is not alone in holding the alarming views which he expressed at the last meeting of the industrial advisory committee of the Ross Institute. The grounds for apprehension are indeed far from negligible. They include: the ubiquity of the mosquito vector, *Aedes ægypti*, and the fact that several other species are potential vectors, at any rate under laboratory conditions; the presence of a huge susceptible animal reservoir in the rhesus monkey; the highly infective character of the virus and the fatal nature of the disease; and the existence of areas in which the disease is latent among the native population. Fortunately, however, there are also several factors militating against an epidemic spread by these means, and they are well summarised in a report drawn up by Colonel S. P. JAMES, which was submitted by the Yellow Fever Commission to the Office International d'Hygiène Publique last October. Yellow fever, the Commission say, is transmitted only from actual human cases in the first three days of the attack; the incubation period does not exceed six days; the agent of transmission is a domestic mosquito which remains in, or in the immediate vicinity of, the house where it has fed, and the insect, after feeding upon an infected case, must survive for 12 days or more before it can transmit the virus to another person. Lastly, it is held that "if there is adequate knowledge of where and when the disease occurs there is little or no difficulty in getting rid of it." Apart from these natural safeguards, important steps have been taken by the League of Nations Health Organisation and the various governments concerned to minimise the risk of spread. The subject has been under the consideration of the Office International d'Hygiène Publique for some years,[4] and last November a League of Nations conference of government health departments was held at Cape Town, where agreement was reached about the measures to be taken, and the early adoption of the International Sanitary Convention for Aerial Navigation by the various African governments concerned was unanimously recommended.[5] The regulations for yellow fever are strict and embody several departures from precedent. For instance:—

> "Signatory countries where yellow fever may exist will not rest content to await the appearance of typical cases but agree to take steps for searching out unrecognisable cases of the disease by biological methods and, if it is present, for defining its geographical distribution: also measures for preventing spread by aerial traffic shall be taken primarily before departure from those areas where the disease exists and only secondarily at ports of arrival; such measures include the requirement that crews and passengers shall have been free from any risk of infection during six days before embarkation and that the aircraft and cargo shall be free from the possibility of conveying mosquitoes. In addition countries which are infectible but not infected may refuse to permit the entry of aircraft from infected countries provided they report the reasons for the prohibition."

It seems clear, therefore, that the sanitary authorities of the countries concerned are fully aware of the dangers and have given them much thought. But of course the International Sanitary Convention for Aerial Navigation has yet to be ratified and brought into effective operation.

Fortunately a further safeguard may soon be in our hands. The use of vaccines and sera received a great stimulus from the discovery that monkeys and white mice were susceptible under certain conditions, and although the first results obtained from the use of vaccines containing killed or attenuated virus to produce immunity were

[1] See, for example: Holden, O. M., Jour. State Med., 1931, xxxix., 457; Rawlinson, E. G., THE LANCET, 1932, i., 111; and Massey, A., Epidemiology in Relation to Air Travel. London: H. K. Lewis and Co., Ltd. 1933. Pp. 68 and 5 maps. 7s. 6d.
[2] U.S. Pub. Health Rep., 1931, xlvi., 1515.
[3] See THE LANCET, 1929, i., 194.
[4] Ibid., 1931, i., 315.
[5] Ibid., 1932, ii., 1445.

disappointing, the simultaneous injection of biologically modified mouse-virus and immune serum seems to have given promising results in the hands of SAWYER, KITCHEN, and LLOYD.[6] Obviously the power of conferring immunity from yellow fever on those passengers or airway personnel exposed to risk would allow considerable modifications in the somewhat irksome restrictions laid down by the proposed Sanitary Convention.

THE RADIOGRAPHY OF CONGENITAL PYLORIC STENOSIS

THE clinical picture of pyloric stenosis in infancy may be such as to leave little room for doubt. In the typical case there is projectile vomiting, usually beginning between the second and sixth weeks of life, associated with wasting, constipation, and visible peristalsis; while the presence of a palpable tumour—a sign to which most experienced observers pay great attention—will almost certainly clinch the diagnosis. At the same time it seems likely that mere spasm may closely simulate a true hypertrophy, while on the other hand any one of the classical features of the condition may be absent. Thus vomiting may be infrequent and not projectile; gastric peristalsis may not be conspicuous and may be visible only after repeated examinations; and the stools are sometimes normal or even diarrhœal. It is in cases of this type that accessory means of diagnosis will be especially valuable, since it is important to have an early decision and it is clearly undesirable to operate when there is no hypertrophy.

Radiography is not yet widely used in the diagnosis of this condition, but it has warm advocates. Dr. ERIC PRITCHARD,[7] indeed, goes so far as to say that in deciding whether operation will be needed he attaches more importance to the X ray appearance after an opaque meal than to the size of the tumour felt on palpation, projectile vomiting, visible peristalsis, or obstinate constipation. Though most clinicians would not be prepared to endorse this opinion, there is certainly increasing evidence that radiological examination may be of real value. In carrying it out the general practice is to give 80 c.cm. or more of the opaque meal by means of a spoon or tube, and importance has been attached in diagnosis to such secondary symptoms as retention of the whole or greater part of the meal in the stomach for three hours or more, excessive peristalsis, dilatation either of the pyloric antrum alone or of the whole stomach, hypertrophy of the muscle wall of the stomach, and antiperistalsis. Dr. T. MEUWISSEN and Dr. J. P. SLOOFF[8] now, however, describe a different technique which they consider more reliable than many of the others adopted; they have used it in examining the stomachs of normal infants as well as those with symptoms of hypertrophic pyloric stenosis. The infant was kept without food from midnight, and in the morning any secretion or air present in the stomach was removed by means of a duodenal tube or a Nélaton catheter No. 18. (The amount of secretion was usually found to be small, and remains of the last meal were present only in a few cases of established stenosis.) Three cubic centimetres of a thin barium meal (100 g. barium sulphate in 150 c.cm. water) was then given through a tube, and spread over the whole stomach area by moving the child. Radiograms were taken dorsiventrally in the vertical and lying positions, and a further 20–30 c.cm. of a thicker barium meal (100 g. barium sulphate to 100 c.cm. water) was passed through the tube. By compression an attempt was made to fill the pyloric canal, which was always found to be lengthened in cases of hypertrophy. Six to ten radiograms were then taken of the canal in the dorsiventral or first oblique position—the rays passing from the left posteriorly to the right anteriorly—according to the position in which it showed best. The distance of the tube from the plate was 70 cm., and of the child from the plate 10 cm. After this the barium was as far as possible washed out from the stomach.

MEUWISSEN and SLOOFF think that whereas the relatively large meals previously used will greatly alter the position and shape of the stomach, 3 c.cm. of their barium mixture will hardly alter it at all, though it gives a clear outline of the organ. Likewise the giving of large meals is likely to distort the picture because of the swallowing of air. In the examination of a considerable number of normal infants by their method, it appeared that the stomach usually lay in the left hypochondrium and extended somewhat beyond the midline; the axis generally ran in an oblique direction from the left above to the right below, but was sometimes horizontal. When the stomach was fuller, the axis altered and became curved. In all the infants examined, however, the organ showed no fixed form; indeed differences were noted when the same child was examined a second time. With the 3 c.cm. meal the stomach seemed small, and even in the cases of stenosis it was never possible to demonstrate dilatation. In these last the pyloric canal was found to be sharply differentiated from the adjacent stomach margin, and in only one (where the hypertrophy appeared to be slight and operation did not prove necessary) was the transition gradual. The canal appeared radiologically as a needle-like shadow, which could be distinguished from the duodenum when the latter began to fill, and which was four to five times longer than normal. Retention of the meal in the stomach was not found to be a reliable index of stenosis, and similarly there was little evidence of excessive peristalsis. After operation the canal was funnel-shaped, and this appearance was observable for some time after symptoms ceased. From this it is concluded that the muscle was still in spasm, although the stenosis had been cured, and in one case the symptoms are interpreted as indicating that hypertrophy was secondary to spasm. MEUWISSEN and SLOOFF distinguish two types of spasm of the pyloric sphincter—one which gives rise to hypertrophy and one which does not.

[6] Jour. Exper. Med., 1932, lv., 945.
[7] Post-Grad. Med. Jour., December, 1932, p. 464.
[8] Acta Pædiat., 1932, xiv., 19.

ANNOTATIONS

SHOCK AND ANÆSTHETICS

SHOCK, especially of the kind called secondary, may fairly be regarded as the chief bugbear of the surgeon who carries out extensive operations. Since the day when Lister made clear the nature and origin of septic complications, experience and continuous development of technique have brought surgeons to the point where they may justifiably claim that sepsis is preventable. Not so shock. For this condition we have no equally definite idea of causation and therefore no equally definite methods of prevention or treatment. In his Arris and Gale lecture before the Royal College of Surgeons of England on Feb. 15th, Prof. R. J. S. McDowall defined shock in animals as "the state which results from a fall of arterial blood pressure which if severe may lead to death from oxygen want." Its onset, he said, may be preceded by a compensated or even overcompensated stage in which the body succeeds in maintaining the blood pressure against the forces which would cause it to fall. This definition—better from a physiological standpoint than a clinical one—gives no indication how the fall in blood pressure may be supposed to originate. Prof. McDowall, however, pointed out that this may be from heart failure, from loss of blood, from an undue opening-up of vessels which are normally closed, or from a reduction of peripheral resistance. Shock may also be caused by violent stimulation which exhausts the vasomotor centre; in fact many regard this as the usual mode of onset of primary surgical shock. This is the kind of shock which is prevented on the operating table by deep anæsthesia. It is the relationship of anæsthetics to deferred shock which is less obvious and at the present day more important. Here the shock is apparently produced chemically by the action of histamine and similar bodies, and it seems certain from experimental evidence that ether and probably other anæsthetics sometimes make recovery from the histamine bodies impossible when it might have taken place in the absence of the anæsthetic. This incriminates anæsthetics in delayed surgical shock in the manner insisted upon by Finsterer of Vienna. Ether is believed to produce its depressing effect by dilating blood-vessels and rendering them more permeable; its action is masked at the time of operation by the stimulating nature of the drug.

It is plain that if these contentions are correct then the greater the damage which the patient suffers—in other words, the more extensive his operation, and the greater his exposure to histamine poisoning—the greater is the need for avoiding any addition of the effects of ether or the like to his histamine-loaded system. Nitrous oxide has been shown by Dale not to increase the susceptibility of an animal to histamine shock in the way that ether does. Prof. McDowall was of opinion that the future would see a greatly extended use of local anæsthetics for patients exposed to these risks. Spinal anæsthesia did not, he said, meet the case, because it interferes with nervous control of the vessels and also causes vasodilatation. He maintained also that concussion of the vasomotor centre is a more common cause of shock than is usually supposed. It may be produced experimentally by simply jarring the head. The importance of acapnia in relation to shock seems to lie chiefly in the fact that it reduces the activity of the vasomotor centre by which the body attempts to compensate for a fall of blood pressure.

POPULATION PROPHECIES

THE factors which produce changes in the quantity and quality of human populations are numerous and complex. It seems to be possible, by stressing one or other of these factors at the expense of the others, to justify any blend of optimism and pessimism about the future. The first World Population Congress was held at Geneva in 1927, when the world was in the middle of a boom, and the dominant note was optimistic. A second conference, held under the auspices of the International Union for the Scientific Investigation of Population Problems, took place in June, 1931, in London and, doubtless in response to the prevailing economic depression, the dominant note was pessimistic. The proceedings of this second conference have now been published.[1] The speakers were not hampered by the restrictions which partially stultified the former one, when discussion of the medical and sociological aspects of birth control was vetoed. This subject now received careful attention from several speakers of different nationality. Moreover, the later conference differed in yet another respect from its predecessor. By several speakers at the 1927 conference, notably by Dr. E. M. East, fears were expressed of the consequences of imminent over-population throughout the world. Dr. East drew an alarming picture of the effects upon Europe, wherein lived some 80–85 million persons depending upon imported food, of the reduction to nil of surplus food for export from food-exporting countries—Canada, Australia, and the Argentine—by reason of the increase of their own populations. But at the 1931 conference the emphasis was laid not upon the dangers of over-population in Western Europe, but upon the appalling prospects of an imminent depopulation in this area. Thus Dr. Eugen Fischer, commenting upon a table showing the decrease in the average size of completed families of certain classes in Germany between 1879–1910, remarks that "these few figures clearly indicate the condition of the people. It is that of a moribund community." Dr. Louis I. Dublin considers it to be not improbable that the population of the United States will reach a maximum of 148 millions in 1970, and that it will then halve itself in the course of the next 60 years. Prof. Fernand Baudhuin, speaking of the future of France and Belgium, says: "in any case, the peoples to which we belong will suffer the consequences of the policy they are now putting into practice; they are probably destined to disappear, or to be absorbed by newcomers." This authority draws a graphic picture of a new Western invasion by Slav races, first by Poles, and then by Russians, in the measure that the Latin countries become depopulated. And Prof. J. W. Gregory holds that the recent restrictions on immigration into under-populated and undeveloped countries, such as Australia, are likely to prove more harmful to the immigrant than to the emigrant countries—a very different prognostication from that delivered by Dr. East four years previously in Geneva. Relieving the pessimistic utterances of these and other speakers (who seem to regard human vital statistics, represented by curves on plotted charts, as inevitably destined to continue in the directions they have already taken, as do the curves made by

[1] Problems of Population. Being the Report of the Proceedings of the Second General Assembly of the International Union for the Scientific Investigation of Population Problems. Edited by G. H. L. F. Pitt-Rivers, B.Sc. Oxf. London: George Allen and Unwin, Ltd. 1932. Pp. 378. 15s.

the heavenly bodies in space) is the voice of Prof. F. H. Hankins of Smith College, Massachusetts. He effectively criticises the fatalism of Prof. Gini's "parabola of evolution," and points out that because human reproductive habits have taken a certain course in the very recent past, it does not necessarily follow that they will continue to take the same course in the future. "There seems to be no reason," he writes, "to doubt the possibility of a restoration of the birth-rate when and if the cultural opportunity develops."

No thinking person can doubt the fundamental importance of population problems. Doubtless at the next conference, new notes and prophecies will be sounded. The factors affecting human births, deaths, and food-supply are all capable of sudden and dramatic change. The elaboration of a simple, reliable, and fool-proof contraceptive, the outbreak of a new and uncontrollable epidemic disease with a selective racial incidence, or the discovery of an organism capable of converting cellulose into assimilable carbohydrate, or indeed many other occurrences psychological as well as physical, might well stultify the prognostications of all existing authorities on population, and hopelessly distort their curves.

BRONCHOSCOPIC SPIROMETRY

A FURTHER stage in work on respiratory function and efficiency tests has been reached in Stockholm where H. C. Jacobæus, P. Frenckner, and S. Björkman have devised an ingenious method of connecting each lung separately to a spirometer. In a preliminary report [1] they sketch the steps which led to their use of a special type of bronchoscope (the Chevalier Jackson type) with a calibre of 7 mm. and a length of 45 cm. The proximal end was closed by a detachable hollow stopper of the same lumen as the bronchoscope and fitted proximally with an obliquely placed glass window. A few centimetres from the proximal end of the bronchoscope was an outlet for air of the same calibre as the rest of the tube. The distal, cylindrical part of the bronchoscope was enclosed by a circular, closely fitting rubber cap about 1 cm. broad. Into this cap opened a fine canal, running along the whole length of the bronchoscope, intended for inflation of the rubber cap. Before each examination a test was made of the pressure required for obtaining with the rubber cap a reliable air-tight closure of a lumen, the size of a bronchus. From a technical point of view the most difficult detail of procedure employed seems to have been placing the distal end of the bronchoscope in exactly the right place, since the distance between the bifurcation of the trachea and the origin of the bronchus of the upper right lobe is only about 2 cm. and it is obviously of great importance that the rubber cap when inflated should not obstruct this bronchus nor interfere with the trachea. An air-tight junction effected with the distal end of the bronchoscope in exactly the correct position meant that the lung under investigation could be connected to a respiratory spirometer of the Knipping pattern.

An attempt was made to determine the volumes of the two lungs simultaneously yet independently of one another. For this purpose a bronchoscope made as already described was enclosed by a second bronchoscope tube reaching from the proximal end of the former to about 10 cm. from its distal end, of such a calibre that the air volume passing between the two tubes was exactly equal to that passing through the inner tube. The distal cylindrical end of the outer tube was also enclosed by an inflatable rubber cap and from the proximal end an outlet tube was constructed to allow the same volume of air to pass per second as through the inlet of the distal end. This double bronchoscope was passed down the trachea so that the distal end of the inner tube was in the correct position in one of the main bronchi and both rubber caps were inflated, sealing one lung to the inner bronchoscope and the other lung through the obstructed trachea to the outer bronchoscope. The lung volumes, including residual air, for both lungs together was first investigated without a bronchoscope, and then the spirometry of the separate lungs was carried out after bronchoscopy. Obviously the operative interference must have a considerable effect upon the respiratory function and any consideration of oxygen consumption, for example, of the lungs separately would be open to serious criticism. In all 11 patients have so far been studied in this way and the sum total of the measurements for the left and right lung as obtained by the method here described agreed surprisingly well with the respiratory volume for the two lungs taken together. Where pathological conditions of the lungs were present X ray examination was also carried out and attempts were made to correlate the findings for "broncho-spirometry" with the radiographic appearances. A certain lack of conformity between them can probably be explained by the spirometric methods being still in the experimental stage. Further work on these lines may well prove useful.

[1] Acta Med. Scand., 1932, lxxix., 174.

HUMAN BLOOD GROUPS IN EVIDENCE

THE medico-legal implications of the present knowledge of the human blood groups were discussed at a meeting of the Medico-Legal Society, held under the chairmanship of Lord Riddell, on Feb. 23rd. Dr. S. C. Dyke pointed out the confusion arising from the existence of the conflicting numerical nomenclatures of Jansky and Moss, and put in a plea for the adoption of nomenclature according to agglutinogen content of the red cells, as suggested by the public health committee of the League of Nations. He drew attention to the importance of the blood groups in civil legal practice for the demonstration of non-paternity, and in criminal practice in the identification of blood stains. The original law of von Dungern and Hirszfeld that the agglutinogens A and B cannot appear in the offspring unless present in the parents still, he said, holds good. The theoretical considerations introduced by Bernstein and Furuhata limit even further the possibilities of group inheritance, but which of these views is accepted makes no difference in so far as the actual possibilities of group inheritance are concerned. The identification of the M and N agglutinogens by Landsteiner and his co-workers narrows the field in cases of disputed paternity; the discovery of the P agglutinogen might in the future take the matter even further. Dr. G. Roche Lynch pointed out that, in a case of disputed paternity recently before the Danish courts, Prof. O. Thomsen had given evidence on the basis of the M and N agglutinogens that the defendant could not be the father of the child in question; on the advice of the Danish Medical Association, however, the evidence was not allowed to weigh conclusively against other evidence, and the defendant lost. Dr. Dyke agreed that the state of knowledge of M and N agglutinogens did not justify the acceptance of such evidence as conclusive at present, though in the future it might be accepted; even now knowledge of the A and B agglutinogens was sufficient to justify

the acceptance of evidence depending on these factors against circumstantial evidence. It was difficult to secure serum and red blood-cells of known groups A and B, and he hoped for the establishment of a roster of individuals of known groups whose blood might be available for medico-legal purposes. Until such a roster was available the issue in forensic work might always be clouded by doubts of the credentials of the reagents used. Dr. Dyke expressed the opinion that evidence on the blood groups given by medical witnesses called by counsel on opposing sides might merely serve to confuse the jury, and suggested that the test might be performed by order of the court by an entirely unbiased expert with no connexion with either side. Dr. F. C. Martley described his method of identifying the group of blood stains by absorption of the agglutinins from a Group O serum. Dr. Roche Lynch gave an interesting account of the identification, in the case of the "city typist" murder, of a blood-stained razor found on the top of a bus as the weapon with which the murder had been committed. The group of the blood of the murdered girl and of the blood stain on the razor was AB; the rarity of this group in the general population served as powerful evidence for the assumption that the bloods were identical. There seems to be no doubt that blood grouping has a definite place in medico-legal investigations which is likely to become even more firmly established in the future.

INFRA-RED MICROSCOPY

SIGHT and sound are not negligible because they are outside the perceptive range of the human retina or the organ of Corti. The infra-red rays thrown out by hills and trees are long enough to evade the obstacles of mist and fog and to reach the sensitised photographic plate although such rays are invisible to the unassisted eye. During the last few months infra-red photographs published in the daily press have kept us in touch with what the heights of Hampstead and Highgate would look like were our domestic chimneys not belching forth smoke, and what Burnley and Blackburn would look like were it not for the unburnt products of manufacturing fuel. These photographs reveal the landscape as it would be if we could see through the encircling gloom, and one may hope for the time when the retina can be sensitised in the same way as the photographic plate. The foreshadowed application[1] of infra-red photography to medicine is proceeding apace. Dr. S. R. Gloyne and his chief laboratory assistant, Mr. A. W. Smart, have been ingenious enough to see if it will enable them to avoid the amorphous dark pigment, so often seen in microscopic sections of lungs, and to reveal the nature of the asbestosis body. The results are shown in a series of photomicrographs in the February number of *Tubercle*, from which it is quite evident that the infra-red plate picks out certain structures and ignores others. How far the differences may be due to the alteration of focus by the infra-red filter—and of course the visual control of focusing is lacking—Dr. Gloyne leaves open for the moment. It is now well known that carbon in the atmosphere is not penetrated by infra-red rays and probably the same is true of carbon particles in lung tissue; but there are other foreign bodies in the asbestotic lung, to which the infra-red reacts differently, and the various stains used by the histologist also produce different reactions. Infra-red rays certainly penetrate thick sections better than do light rays, and their use opens up possibilities in the photomicroscopy of dense structures such as pneumoconiotic lungs. The British Journal Photographic Almanac[2] for 1933 gives some striking examples of what can be done with infra-red plate and filter.

[1] THE LANCET, Jan. 28th, p. 209.

MILK GRADING IN THE UNITED STATES

Prof. G. S. Wilson[3] has lately given a detailed account of the system of grading milk in the United States of America, which he has studied on the spot. While many different arrangements are set out, the most interesting part of his report is a description of, and critical comparison between, the two main administrative procedures—the permit system and procedure by milk ordinance.

The permit system is the older and is in force in those towns and States which have not decided to operate under the milk ordinance system. Being a local system it may, and usually does, vary in its details in each city or State. The different authorities concerned are very numerous, since there are State regulations, county regulations, the requirements of the smaller towns, and, in particular, the regulations of the large cities, which may not restrict their activities to their own area but extend their inspection powers into outside areas sending milk into the city. It is impossible therefore to do more than indicate their trend. The general principle is that no person shall sell milk or offer it for sale without having first obtained a permit from the health officer. Before such a permit is given there is intended to be a very complete inspection to see if all requirements are complied with, and to get any defects remedied before the permit is issued. In the more efficient areas this is usually combined with a system of milk grading. The enforcement of the grades under the permit system is dependent on inspection, and on chemical and bacteriological analyses carried out in the State and in the municipal laboratories.

The milk ordinance is a system recommended by the public health service of the Federal Government for adoption by States, counties, or cities, in order to encourage a unification of milk control practice in the United States. The ordinance and the code make up a bulky volume, the code giving a detailed explanation of the exact meaning of each section of the ordinance. The Federal Government has no executive powers in the control of milk, and its functions are merely advisory, so the adoption of the ordinance is purely voluntary. The ordinance permits as many as eight different grades—i.e., Certified, Grade A Raw, Grade B Raw, Grade C Raw, Grade D Raw, Grade A Pasteurised, Grade B Pasteurised, and Grade C Pasteurised. These are all defined in terms of the conditions on farm and dairy, and with definite bacteriological standards. The health officer of the area that has adopted the milk ordinance is required, at least every six months, and preferably once every three months, to announce the grades of milk and cream delivered by all producers and distributors. These are determined by inspections and analyses, and detailed instructions are given as to the numbers of bacteria allowed. Failure to comply with requirements is usually punished by de-grading—i.e., reducing to a lower grade, and, in extreme cases, by revocation of permission to sell milk. A valuable feature, both to prevent injustice and to encourage the production of milk of good quality, are the clauses which enable a de-graded

[2] London: Henry Greenwood and Co. Pp. 654. 2s.
[3] Quart. Bull. Health Organisation League of Nations, 1932, 1., 664.

vendor to return quickly to his grade on proof that the unsatisfactory conditions are removed.

The two systems have it in common that they make use of the principle of differential grading which should ensure that all milk sold within a given area is appropriately labelled. Prof. Wilson holds that "it is difficult to over-estimate the advantages of this practice. The lower class of producer or dealer is faced with the alternatives of reforming his methods, or of labelling his milk with a low-grade designation." If this goes hand in hand with adequate education, demand for the lower grades of milk almost ceases. Obviously, however, a not too high standard must be set when the scheme is introduced. The permit system, without any grading, is administratively difficult to enforce. Revoking the permit is drastic, and if the dairy persists in carrying on, a penalty for selling milk without a permit is not always enforceable in court. Prosecutions for infringement of individual violations of the regulations are troublesome and lead to a strained relationship between the health officer and the industry. These difficulties tend to laxness in administration. Under the milk ordinance system main reliance is placed upon de-grading, and the milk-seller has to put a lower grade label upon his bottle caps. If he breaks this requirement it seems that public sympathy is not in his favour, and convictions are readily obtained. The legitimate criticism that there are too many grades in the ordinance is met by the fact that the number to be adopted by the community using the ordinance is optional, and a sufficient number must be included to meet the varied local conditions. A more important objection is that the cost of inspection and laboratory work is high and considerably higher than under the permit system as usually practised. It is also obvious that good working of both schemes, but particularly the ordinance system, involves not only accurate laboratory procedure, but a high standard of technical knowledge, vigilance, and mental honesty on the part of the local health officials. Prof. Wilson considers that there is little likelihood of its uniform adoption in the near future.

COLOUR BLINDNESS IN DOCTORS

BETWEEN 3 and 4 per cent. of males are said to show gross congenital colour blindness, and if minor degrees of the defect are included the proportion must be much higher. Even severe cases, however, often pass undiscovered unless specially tested, and medical students are almost as likely to be congenitally colour blind or colour-defective as any other body of young men entering on a career. Women as a rule are exempt, but men may find the disability a serious professional handicap. This possibility has been investigated from the practical point of view by Dr. Leandro M. Tocantins and Dr. Harold W. Jones[1] of Jefferson Medical College in Philadelphia. Seventy members of the junior class of the medical school were asked individually to read the Ishihara plates (one of the modified Stilling tests), and 9 of the 70 were found to have some defect of colour sense. These nine were then required to perform six separate tasks involving the distinguishing of colours in solutions and stained microscopical slides, the results being compared with those obtained by six students of the same class with normal colour vision. The mistakes made by the colour-blind group were far in excess of those made by the normal group. Only two out of the nine in the former could distinguish Gram-negative organisms in a smear, although they could identify Gram-positive ones. The entire group failed to distinguish acid-fast bacilli if methylene-blue was used as a counter stain, though with Bismarck brown they found it easy. The colour-defective group were next questioned individually. Some had difficulty with exanthematous skin lesions. They could not recognise the rash in scarlet fever. One man could not recognise jaundice except in the sclera. Nearly all had difficulty in seeing the tubercle bacillus, a circumstance which had led to difficulties in examinations. It is evident that men with a marked defect of colour vision suffer under a serious handicap in laboratory work and in clinical medicine. As a compensation, however, for those who have colour-defective vision they seem to have a more than average ability to distinguish between various shades of light and dark, and it is said that a colour-defective engraver was specially prized by a Philadelphia publishing firm on this account. Tocantins and Jones suggest that this faculty should make young doctors with defective colour vision specially suited to take up the specialty of radiology.

[1] Amer. Jour. Med. Sci., February, 1933, p. 223.

CARDIOVASCULAR SYPHILIS

IN a discussion[1] recently held by the New England Heart Association Dr. T. B. Mallory pointed out that the essential pathological process in cardiovascular syphilis is an aortitis. When this lesion involves the root of the aorta the result is aortic regurgitation. Rarely, if ever, is aortic stenosis caused by syphilis, and here it is in striking contrast to rheumatism, which in attacking the aortic valve usually produces stenosis and regurgitation together. Mallory also found that of 15 cases of syphilitic aortitis with involvement of the valves all but one showed narrowing of the openings of one or both coronary arteries. Dr. P. D. White said that the incidence of syphilitic heart disease in New England is low, forming only 2·4 per cent. of cases of organic heart disease seen privately. This incidence is somewhat higher in hospital patients. In 2100 autopsies evidence of hypertension was noted more than three times as often as evidence of cardiovascular syphilis. The latter is more than five times commoner in men than in women, and the age-incidence reaches a maximum between the ages of 50 and 60, except in negroes, where it is 5–10 years earlier. That the diagnosis of syphilitic aortitis in the absence of aortic regurgitation or aneurysm may be difficult or impossible is shown by the fact that 23 of 25 uncomplicated cases presented no abnormal physical signs. Of 78 private cases 56 had aortic regurgitation and only 5 aortic aneurysm. Although 23 of the 78 patients suffered from angina pectoris, White regards syphilis as a rare cause of this condition, for among 500 patients with angina it was found in only 6 per cent. This rarity of syphilis as a cause of angina was confirmed by another speaker, Dr. S. A. Levine, who found it in only 4 per cent. of his angina cases. Despite what was formerly taught, it is also unusual for syphilis to play any part in the causation of coronary artery disease and thrombosis. Even in those rare cases in which the two diseases occur together, it is almost always found that the coronary disease is arterio-sclerotic and not syphilitic. While the Wassermann reaction is as a rule strongly positive, a negative reaction by no means rules out syphilitic aortitis, since in the autopsy series it was negative in 21·4 per cent. This finding has been

[1] New Eng. Jour. of Med., Jan. 26th, p. 177.

confirmed by Levine. As regards treatment of the established condition, Dr. C. Morton Smith agreed with the view, generally accepted in England, that most reliance should be placed on potassium iodide and mercury, perhaps supplemented by bismuth intramuscularly. Arsenical preparations should be used cautiously if at all, and then only after a preliminary course of iodide. This caution applies particularly forcibly to cases with aortic regurgitation, since in them the coronary orifices are almost certainly narrowed, and any local reactionary swelling may produce complete occlusion and sudden death. This conception of the treatment of cardiovascular syphilis agrees very closely with that expressed by the majority of the contributors to a symposium lately published in France.[2]

ASCORBIC ACID AS VITAMIN C

IN the story of the vitamins history tends to repeat itself. This is perhaps not surprising since these substances have at least one great property in common, the property of exercising their beneficent influence in extremely small quantities. In fitting cholesterol and carotene into their proper niches in the story, the same question arose: "Is cholesterol capable of activation by ultra-violet light to form vitamin D, or does this property belong to a contaminant?" and "Is carotene capable of acting as provitamin A or is vitamin A itself present as a contaminant?" The final verdict was not the same in the two cases: cholesterol was pronounced impure and itself inactive, being contaminated with the active ergosterol; carotene was declared pure and uncontaminated and itself active. Hexuronic acid now stands where carotene and cholesterol stood, and what will the answer be to its claim to be itself the antiscorbutic vitamin? Is the verdict to be pure or impure? Prof. A. Szent-Györgyi, the discoverer of hexuronic, which he now prefers to call ascorbic acid, is himself in no doubt, for, speaking of the antiscorbutic vitamin, he says: "To-day this substance can be bought at a relatively low price, neatly sealed in tubes in the form of beautiful white crystals."[3] The greater part of the rest of informed opinion seems to agree with Szent-Györgyi in his claim that ascorbic acid is the vitamin.[4] One of the most experienced workers in the field, Dr. S. S. Zilva, however, is not convinced, and his objections must carry weight.

Szent-Györgyi first prepared ascorbic acid from adrenal glands, but the supply of these was limited and the yield of ascorbic acid too low to provide material for an exhaustive study. Again history repeats itself; just as vitamin A defied isolation in anything approaching a state of purity until the comparatively weak cod-liver oil was replaced, as the raw material, by the enormously much more potent halibut-liver oil, so now the investigation of ascorbic acid can advance with a bound, with the discovery that a Hungarian red pepper (*Capsicum annuum*) contains ascorbic acid in very large quantities and in a state which makes purification easy. A pound of ascorbic acid has thus been prepared, on which, with international coöperation, a chemical study has been made; so the evidence thus collected seems still to support ascorbic acid's claim to vitamin status.

[2] Vie Méd., Dec. 25th, 1932.
[3] Nature, Feb. 18th, p. 225.
[4] Birch, T. W., Harris, L. J., and Ray, S. N.: Nature, Feb. 25th, p. 273; Dann, W. J.: Ibid; Waugh, W. A., and King, C. G.: Science, 1932, lxxvi., 630; Tillmans, J.: Zeits. f. Untersuch. d. Lebensmittel, 1932, lxiv., 11.

GENTIAN-VIOLET IN THE TREATMENT OF BURNS

THE tannic acid treatment of burns is based on the theory that the symptoms associated with extensive lesions are due to the absorption of toxins from the damaged area. Dr. R. H. Aldrich[1] challenges this theory, and puts forward the view, on behalf of Dr. W. M. Firor, that the symptoms are a result partly of fluid loss, with a corresponding increase in concentration of the blood, and partly of sepsis, pure and simple. In an investigation of the bacteriology of burns they found that, for the first 12 hours, cultures taken from the burned areas were sterile, apart from occasional contaminating organisms such as *Staphylococcus aureus* and *albus* and *B. coli*; after that, in all severely burned patients, the beta-hæmolytic and gamma streptococcus could be grown in cultures taken from the wound. The concentration of the organisms increased with the obvious signs of sepsis and with the beginning of the so-called toxic symptoms in the patient, until at the end of 48 to 56 hours pure cultures of the streptococcus could be obtained; coincidently the patient showed the characteristic bad effects of burning. As gentian-violet is regarded as a specific antiseptic for this organism, Firor and his colleagues tried using a 1 per cent. solution of the dye as a dressing for burns, and claim excellent results. Without preliminary cleaning of the burned area the dye is sprayed on at two-hour intervals for the first few hours. No dressing is applied, but the raw surface is exposed to the air and protected by a cradle. A thin, tough, flexible eschar rapidly forms, and spraying is then only performed every four to six hours during the day; the treatment is continued until healing is complete. If the eschar shows signs of softening, the softened portion is removed and the underlying surface sprayed afresh. The originators of this treatment claim that analgesia is produced almost instantaneously, that loss of fluid from the burned area is prevented, and that if sepsis can be successfully avoided the characteristic signs of extensive burning—such as stupor, fever, delirium, and albuminuria—do not appear. Apart from the preliminary shock there is no great prostration, and the patient may even be able to get up. Aldrich quotes three cases of extensive burns in which this treatment produced admirable results, and a fourth in which the patient, a child of 9, who had lost over three-fifths of the skin area, died of cardiac failure after two months of encouraging progress.

[1] New Eng. Jour. Med., Feb. 4th, p. 299.

FEDERATION OF THE HEALTH RESORTS OF FRANCE. The following medical tours will take place in the South of France during the Easter period. From April 10th to 18th there will be a tour of the Provence and Riviera districts, during the course of which visits will be paid to Marseilles, Aix-en-Provence, Les Baux, Arles, Cassis, La Ciotat, Hyères, St. Raphael, Cannes. From April 16th to 23rd there will be a tour along the Riviera, visiting Cannes, Antibes, Juan-les-Pins, Grasse, Venice, Nice, Mentone, Monte Carlo. The tours will be under the scientific direction of Prof. Imbert and Olmer, of the Faculty of Medicine of Marseilles, and Dr. Georges Baudouin of the Institute of Hydrology and Climatology at the Collège de France Information as to the cost of the tours may be obtained from the Secretary, Société Médicale du Littoral Méditerranéen, 24, Rue Verdi, Nice (A.M.).

SPECIAL ARTICLES

THE EFFECT OF PASTEURISATION UPON THE NUTRITIVE PROPERTIES OF MILK

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(*Concluded from p. 433*)

Human Feeding Experiments

In view of the very extensive literature dealing with infant and child feeding, it is noteworthy that there are scarcely any studies which are of use for a comparison of raw cow's milk and pasteurised cow's milk. The utility of cow's milk in infant feeding is universally accepted and practised. The peculiar value of milk as a growth stimulant for the young has been established by a number of special investigations, that of Corry Mann (1926)[36] being the most convincing. The problem whether this valuable food is diminished for the child by pasteurisation remains uninvestigated, probably for the very sound reason that heated milk has been so extensively used without any signs of detriment that the scientific investigator realises no call for special critical study.

In the following summary I have dealt with all the investigations I can find which have any bearing on this particular point, or which have been alleged to have a bearing.

Daniels and Stearns (1924)[37] carried out no feeding experiments with raw milk, but compared a few babies fed one group on a milk mixture pasteurised for 30 minutes at 145° F. in bottles, and the other group fed on milk mixtures brought quickly to the boil three times, taking eight minutes in all. They estimated the calcium and phosphorus retention in the two groups, and for the six infants studied they conclude "the calcium and phosphorus retention in infants fed on quickly boiled milk mixtures was considerably greater than it was when the milk mixtures were pasteurised." Their results in no way contribute to the question at issue. The food heated was not whole milk, but a mixture with cream, a carbohydrate (dextri-maltose or lactose), and water. It was a diluted milk and it may have reduced the calcium content to a dangerously low level. The calcium content of the diluted milk is not given. Their results do no more than suggest that prolonged heating may reduce the available calcium and phosphorus more than quick boiling.

Ladd, Evarts, and Franks (1926)[38] published particulars of feeding experiments with groups of children in foster homes. Dealing with infants in the first year of life the following are their main findings.

Group 1 babies (61 cases) fed on pasteurised milk without orange juice or cod-liver oil over a period of 6 to 9 months showed a percentage weight development from 82·1 at entrance to 83·8 at the end of the period, of expected weight increase. A second group of 59 cases, which had orange juice in addition, showed a percentage weight development from 82·2 at entrance to 90·1. A third group which had cod-liver oil and orange juice in addition to pasteurised milk gave percentage weight development from 80·2 to 89·7. A fourth group of 17 cases only, fed on certified milk (raw) without orange juice or cod-liver oil, showed a percentage weight development increase from 80·0 to 94·0.

In a certain number of cases periodical X ray examinations of the wrists were made at three-monthly intervals. In 17 cases of the certified milk group 13 showed no X ray rachitis at the beginning of the period of observation, but 3 of these developed mild rachitis. Of 12 cases fed upon pasteurised milk with cod-liver oil and orange juice 4 showed no X ray changes at the beginning, while the 8 which did show signs were healed or healing at the end of the period of observation. If "period of observation" includes at the beginning of feeding, obviously the two groups are not comparable while nothing can be deduced from these findings.

Since the certified milk is extremely high-grade milk from specially fed cows and the other ordinary milk of unknown quality called Grade A pasteurised milk, the comparison is valueless. The authors recognise this fallacy and point out:—

> "It is quite possible that the greater efficiency of certified milk over pasteurised milk is due to the more exact and scientific feeding of the cows in the particular supply of certified milk used and not to the quality of rawness."

Lewis (1929)[39] compared two groups of unselected children, all under 9 months and all entirely artificially fed. Group 1 consisted of 122 infants fed upon certified milk. Group 2 of 112 fed on pasteurised milk. The author found that the infants fed on certified milk made decidedly more progress than those fed on pasteurised milk, this being specially marked in the 0–3 months group. The occurrence of rickets was less noticeable in the certified group or, if present, it was milder. In every case—i.e., for both groups—the milk was *boiled* before feeding for two minutes. The author admits that the certified milk was "milk of superlative quality," while that pasteurised was ordinary milk. The chemical composition of neither milk is given. Obviously the work is useless to judge the effect of pasteurisation, but merely illustrates the nutritive superiority of certified milk.*

THE LANARKSHIRE EXPERIMENT

The milk-feeding experiment in Lanarkshire (Leighton and McKinlay, 1930)[42] was on a large scale and comprised 10,000 control children, 5000 given raw milk and 5000 given pasteurised milk. The milk used was Grade A (tuberculin tested) raw, and the same milk pasteurised. Heights and weights were the criteria used. The data germane to the present review are shown in Tables VI. and VIa.

While they show clearly the value of the milk ration in increasing height and weight, they are less valuable for comparing raw and pasteurised milk. The tables show that for boys at three age-periods there was greater weight increase with pasteurised milk, while at four age-periods it was the other way about. For the girls at two age-periods the pasteurised milk figures were higher, at four they were less, and at one practically identical. Taking into consideration differences which are significant the authors conclude:—

> "In so far as the conditions of this investigation are concerned the effects of raw and pasteurised milk on growth in weight and height are, so far as we can judge, equal."

* Some apology is owing for quoting these three investigations as, whatever their merits on other grounds, they are wholly worthless as yielding any evidence on the nutritive effects of pasteurisation. It is necessary however to describe them since they have been mentioned in several scientific papers [e.g., Williams and Mattick (1931)[40] and Andrews (1933)[41]] as furnishing such evidence, and extensively quoted as part of the propaganda against pasteurisation.

Bartlett (1931)[43] challenges this contention and by rearranging the age-groups slightly, and by paying special attention to the numbers in each group arrives at a different opinion. Dealing only here with his weight calculations these are shown in Table VII.

He concludes :—

"In the light of these figures it seems impossible to conclude that raw and pasteurised milk are equal in their effect on growth in weight and height. It may be argued with truth that the actual differences in growth are small, but it must be remembered that the experiment only lasted for four months, and if a significant advantage for raw milk can be demonstrated in this short period, it will be evident that considerable differences may be expected in populations in the course of years or of generations."

TABLE VI.—*Average Increase in Weights (in Ounces) in the Three Groups*

Age.	Boys.			Girls.		
	Control.	Raw milk.	Pasteurised milk.	Control.	Raw milk.	Pasteurised milk.
5–	11·64	14·88	15·65	7·00	14·50	6·62
6–	13·75	13·51	9·96	11·21	10·61	10·05
7–	11·17	14·85	15·55	8·90	11·22	12·94
8–	11·38	14·21	15·21	9·77	13·40	13·37
9–	9·53	13·43	11·83	7·87	13·81	12·52
11–	7·10	13·53	10·39	9·51	15·08	18·96
12–	6·14	12·74	11·05	12·62	24·92	17·08

TABLE VIA.—*Average Increase in Heights (in Inches) in the Three Groups*

Age.	Boys.			Girls.		
	Control.	Raw milk.	Pasteurised milk.	Control.	Raw milk.	Pasteurised milk.
5–	0·75	0·95	0·94	0·86	0·64	0·87
6–	0·80	0·87	0·87	0·80	0·86	0·84
7–	0·76	0·87	0·82	0·75	0·84	0·81
8–	0·74	0·82	0·79	0·71	0·81	0·78
9–	0·69	0·80	0·74	0·66	0·76	0·78
10–	0·68	0·76	0·68	0·71	0·79	0·72
11–	0·69	0·74	0·70	0·77	0·86	0·81

Unfortunately the conditions of the experiment make it unjustifiable to draw any definite deduction from these very small differences. Milk was only an accessory for these children to the extent of three-quarters of a pint per day. No information is given, or probably was obtainable, as to the main part of their diet. The pasteurised and raw milk fed groups were not from the same school but the children in one school all received raw milk, in another all pasteurised. The home family conditions in the different schools may have been very different. The children were weighed in their indoor clothes, only less boots or shoes, and only to the nearest ounce, while since it extended from February to June the amounts of their clothes would fluctuate markedly. Bartlett's table shows that the raw milk gave an advantage of 1·36 oz. for each boy, 0·59 oz. for each girl, and 0·96 oz. for boys and girls together. With these variable factors an average difference of less than 1 oz. over a period of four months in rapidly growing children can hardly be considered of any significance although it is interesting.

In this connexion it is worth noting that over the period of the experiment unemployment was rife and probably many of the children were underfed, and it is likely that there was considerable calcium deficiency in the home diet. This is probable from the work of Orr and Clark (1930)[44] in towns of Scotland. This point is considered further in the general discussion on this paper.

Sprawson (1932)[45] produces evidence that in certain institutions 40 children in one series showed no caries when he examined them at various periods subsequently, the average being about four years, while in a second series there were very few cases of caries. The children in the first series commenced the use of raw milk before 12 months old, and in the second between 1 and $2^{7}/_{12}$ years. He ascribes the relative freedom from caries to the use of the raw milk. In fact, however, the milk was not always given raw as it was given to the younger children "warmed," which may easily have been at temperatures equivalent to "flash" pasteurisation. He gives no comparable data dealing with pasteurised milk, and agrees that there is no exact knowledge whether or no effects comparable would result with pasteurised milk. He infers not, apparently from his mistaken idea that all children get a considerable milk ration during the first three or four years of life which is almost invariably sterilised by boiling or pasteurisation. This incorrect generalisation has evidently misled the author. This paper offers no evidence either way as regards the relative value of raw and pasteurised milk in preventing caries, but is a welcome contribution throwing light on the possible utility of milk as milk as a means of preventing dental caries.

TABLE VII.—*Average Increase in Weights (in Ounces) in the Three Groups*

Recalculated to increase the number of children in each group.

Age (years).	Boys.			Girls.			Boys and girls.		
	Control.	Raw milk.	Pasteurised milk.	Control.	Raw milk.	Pasteurised milk.	Control.	Raw milk.	Pasteurised milk.
5, 6, and 7 ..	12·38	14·25	12·77	9·92	11·00	11·32	11·15	12·67	12·04
8 and 9	10·48	13·80	13·45	8·81	13·60	12·95	9·65	13·71	13·19
10 and 11	6·73	13·20	10·68	10·77	19·13	18·17	8·75	16·18	14·39
Total of all ages	10·06	13·78	12·42	9·74	14·41	13·82	9·90	14·09	13·13

Frank, Clark, Haskell, Miller, Moss, and Thomas (1932)[46] are responsible for a United States Report dealing with the nutrition of children fed respectively on raw and pasteurised milk. The statistics were compiled with the help of various State departments. The age-weight curves were plotted for 3358 children, and the age-height curves for 3319 children, all aged 2 to 6 years, and from a considerable number of cities. An insufficient number of returns were available for children under 2 years of age. Unfortunately, very

few children received no heated milk, so they were divided into the two following groups :—

A. Children who had received raw milk for more than half their lives.

B. Children who had received heated milk for more than half their lives.

There was practically no difference between the groups as regards average heights or as regards average weights. The average for Group A was 36·0 lb., and for Group B 36·3 lb. There were no differences in the financial status of the two groups. The authors conclude : "The growth-promoting capacity of heated milk plus the supplementary diet received by the average American child of 10 months to 6 years is not measurably less than the growth-promoting capacity of raw milk plus the supplementary diet received by the average American child of 10 months to 6 years."

The value of a statistical return combined in this way from many cities is not impressive. It does not deal with the most important group—children under 2 years of age. The children were weighed with only the outer garments removed. No information is available as to the other food taken, and the milk is only part, possibly a small part, of the total food intake. I do not think bulk statistics of this nature can help much in solving the problem of a slight nutritional change in one article of food when we are without any knowledge of the rest of the food intake. All that the report can be taken to show is that with a mixed diet in children aged 2–6 years these figures show no prejudicial effect from the substitution of heated for raw milk.

FEEDING WITH DRIED MILK

Dried milk is heated milk. When made by the roller drying process the temperature exposure period is only a few seconds, but the actual temperature reached is high as the temperature of the interior of the rollers is from 130° C. to 160° C. In vacuum-dried milk the temperature in the chamber is from 40–55° C., and in spray-dried milk it may be well above pasteurisation temperatures. There is probably some slight reduction of available calcium, and indeed Kramer, Ladzke, and Shaw (1928),[47] with five children aged 7–12 years, did find rather greater retention of calcium by the children with fresh milk than when supplied as dried milk.

At infant welfare centres and other places all over the country enormous quantities of dried milk have been regularly utilised for many years for infant feeding. Most of the officers of these clinics are nutritional experts and would readily notice any nutritional defects in infants so fed if they occurred. We get no such reports, and dried milk is found to be extremely satisfactory. Dried milk is not exposed to precisely the same temperature as pasteurised milk, but the chemical changes which occur are probably just as great if not much more considerable. The fact that for at least 20 years dried milk has been very widely used for infant feeding without the slightest evidence of nutritional loss or any lessened value to the infant is of considerable importance as showing that these very trivial chemical changes are not likely to be of much clinical significance.

Discussion

The basic fact in any consideration of the nutritive effects of pasteurisation on cow's milk as a food for the human child is that cow's milk is not a natural food for man at all, and its composition is based on the requirements of the calf. It is very far from being a perfect food for an infant, as is constantly recognised by physicians with their innumerable modifications to make it less unsuitable. The fact that anyone should dare to heat it, even if that heating considerably modified its composition, is not as such a crime, it may be a highly beneficial action improving its nutritive value for the child. There is nothing sacrosanct about the composition of cow's milk in relation to man.

When we study the ascertained changes caused by pasteurisation we find that they are very trivial. The diffusible calcium is reduced from 26 to 20 per cent. (as CaO), there is probably some loss of the minute amount of iodine present, and there is a reduction of the already inadequate amount of vitamin C. There is no evidence of any other significant changes. These changes are so unimportant that the opponents of pasteurisation are driven to suggest the presence of hypothetical substances in milk which might conceivably be of importance in nutrition, and which might possibly be damaged by heat treatment. These hypothetical possibilities have never materialised.

When we contrast cow's milk with human milk we find that the effect of pasteurisation is slightly to bring cow's milk nearer in composition to human milk as regards available calcium and phosphorus, and as such this heat treatment may be regarded as beneficial. For infant feeding pasteurised milk is a slight improvement.

As regards vitamin C, all experts regard cow's milk as an inadequate source of supply, so it is of no significance if this vitamin is diminished or not, since a supplementary supply is necessary whatever kind of cow's milk is supplied.

A study of the chemical changes and the composition of the two kinds of milk lends no support to the view that pasteurised milk is in any way inferior to raw cow's milk for infant feeding.

The animal experiments have been set out in detail, and it is evident that there is not the slightest evidence to invalidate the above conclusion. They may have some significance for animals with calcium needs above or equal to that of the cow but have none for human beings with relatively low calcium requirements.

When we turn to the human feeding experiments it is noteworthy that there are none which settle the nutritional effects of pasteurisation, and most of them have nothing to do with the question since the points at issue were never really investigated. We are left therefore with the immense volume of clinical experience in this country, in U.S.A., and elsewhere, showing that pasteurised milk has satisfied the needs of infant and child feeding over very many years and without any evidence of detrimental loss, provided (as for milk generally) any possible deficiency of vitamin C is made good. With this mass of clinical experience available it is for the opponents to demonstrate nutritional harm by pasteurisation, and the experimental work cited shows that this they have conspicuously failed to do.

While these facts apply with particular force to infants, the position as to older children may not be quite the same. Assuming as accurate that there is some small diminution in available calcium, and possibly of phosphorus, may it not be that this is not without effect as regards older children whose calcium-phosphorus requirements are not limited as they are for infants ?

The needs for older children as regards calcium are considerable for bone formation, and Sherman (1927),[22]

quoting Herter, points out that there must be an average storage of about 37 g. of calcium annually for the years 3 to 16—i.e., an annual daily storage of about 0·1 g. Although calcium is abundant in many foods, there is in fact often an inadequacy in the diet of many poor children. It is probably the abundance of calcium and phosphorus in milk which makes it such a good growth stimulant for the child.

Mentioning but one paper, Sherman (1923) [48] reports studies of 21 children aged 3–14 years, covering a period of 417 experimental days. In the first series the children on ordinary mixed diet received 750 g. (about ¾ quart) of milk daily. On this diet they stored calcium in quantities approximately proportional to their body-weight. In the second series when the amount was increased to 1000 g. (1 quart) per child per day the rate at which the children stored calcium was materially improved.

Of course intake and retention are two different things, while the ratio of calcium to phosphorus is of importance, as Stearns (1931) [49] has shown, but generally a high calcium phosphorus intake is helpful.

The slight diminution in available calcium possibly may be a drawback to an older child on a diet inadequate in calcium, and over a long period might have some influence on growth magnitude. The effect is so small that it is not an argument of any weight against pasteurisation. Over a long period it might account for a slightly less weight increase, and the difference of just under 1 oz. in four months, as shown in the criticism of Bartlett, may be explainable on this supposition.

Summary

1. The known changes in cow's milk produced by pasteurisation are very slight. The proportion of insoluble calcium is increased by about 6 per cent., the iodine is reduced by about 20 per cent., and there is a reduction of vitamin C.

2. These changes in the calcium, and possibly in the phosphorus, content of cow's milk effected by pasteurisation make it approximate a little more closely in composition to human milk, and as such are an improvement when cow's milk is substituted for human milk. The diminution of vitamin C is unimportant, as this vitamin is usually inadequate and has to be supplemented for both raw and pasteurised milk.

3. Animal feeding experiments provide some evidence that pasteurised milk is less growth-promoting than raw milk for animals whose calcium needs are equal to or greater than that of the calf. They furnish no evidence that pasteurised milk is less nutritive for animals such as the human infant, whose needs for calcium are below that of the calf. Any deductions, from experiments on the one group to the other, are unscientific.

4. There are no human experiments which demonstrate that pasteurised milk is less nutritive to the young child than is raw milk.

5. There is a vast mass of clinical experience which shows that heated milk has been consumed for years by infants and young children without any detectable deterioration in their nutritive condition. In view of the negative evidence as to any nutritional damage by pasteurisation, this volume of clinical experience is entitled to the highest consideration.

6. For much older children, if their diet is insufficient in calcium, it is possible that the small reduction in available calcium which seems to occur with pasteurisation might exert a slight retardation of growth. At the most this would be slight and probably unimportant, while at present it is only a possibility. It is too small to have any significant bearing on the value of pasteurisation.

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CONTRIBUTORY SCHEMES AS A "MENACE" TO HOSPITALS.—The following passage appears in the annual report of the Birkenhead and Wirral Children's Hospital: "A serious menace to voluntary hospitals is the alarmingly increasing numbers of people claiming free treatment, either as being in receipt of help from public funds or on account of being members of contributory schemes. The grants made by those organisations to meet the growing expense to the hospitals are not commensurate with the services expected and provided." The year's working of the institution shows a deficit of £3332.

MEDICINE AND THE LAW

Heart Disease as an Accident

THERE is one more case to be added to the decisions which make the employer pay compensation as for an accident where a workman with a weak heart drops down dead at his work. No matter how diseased the heart may be, no matter how slight the strain imposed by the work, the law looks upon the combination of disease and employment as amounting to an accident. The man has tried to do something beyond his physical powers; he has miscalculated his strength; some part of his physical mechanism has given way, and this event is legally therefore an accident. A man of 46 with a diseased heart was working on a ship, loading bags weighing a hundredweight or more which were slung on board by a crane. He started at 6 in the morning, knocked off at 8 for breakfast feeling a little queer, and resumed work after breakfast. At 9.30 he gave himself a slight jerk and hurt a finger in trying to stop a line of bags from swinging. Nevertheless he went on working and presently, after a pause in the party's labours, he got up to strike a hook into a bag when he fell forward and died. Death was certified to be due to myocarditis and syncope. The case (Treloar *v.* Falmouth Docks) looked a simple one, very like previous cases where the employer has been held liable. For once, however, the county court judge went against the usual trend of decisions by holding that the injury was due to the disease and not to the employment. He said he was not satisfied that death resulted from anything the workman was doing in the course of his employment, and he was not satisfied that death was due to an injury by accident arising out of, and in the course of, his employment. The Court of Appeal, faced by this awkward finding of facts, ruled that there was no evidence on which the county court judge could find as he did; the death was contributed to by the ordinary course of the work. The judge had misdirected himself as to what constituted an accident in law. It was unnecessary to prove that there was any abnormal strain in the work which caused death. Therefore death was an accident arising out of the employment. On Jan. 30th the House of Lords agreed.

In 1929 the Scottish courts expressed a doubt about the extent of this doctrine. The Lord President of the Court of Session observed (in Millar *v.* Coltness Iron Co.) that he did not think the decision in Clover, Clayton and Co. *v.* Hughes would support so wide a proposition as that "any and every physiological breakdown in the workman's system, occurring while he is subjected to the stress of his ordinary duties," would support a claim under the Workmen's Compensation Act. Recent decisions in the House of Lords, however, show that a workman's death from heart disease during working hours will mean that the employers must pay. Heart disease is an accident against which they insure the workman. They must pay whether the man's health was previously good or bad.

"Discharged from the Dock" on a Medical Certificate

The allegations made by Scottish members in a House of Commons debate reported in our last issue (p. 448) should not be left where they stand. If no other inquiry is offered, a fresh Parliamentary opportunity can be made on a motion to reduce the salary of the Lord Advocate, who, when he returns to duty, will doubtless know how to defend actions for which he is officially responsible. In effect it is suggested that, in the Scottish Amalgamated Silks trial, rich persons implicated in a crime escaped from justice on an untrue medical certificate, one of them being "discharged from the dock" by this method. Is life as easy as this in Scotland? Are there not three stages? Not only must a venal doctor be bribed to sign a false certificate; in addition a venal prosecutor must be bribed to abandon the proceedings at sight of it, and a venal court must be bribed to permit the abandonment. If all these conditions were fulfilled, the administration of justice would indeed be in a desperate way. An English commentator must walk warily in the field of Scottish procedure. In the English courts, in cases of drug addiction, reckless driving, or shop lifting, or in any circumstances where mental instability is pleaded, medical evidence for the defence is certainly tested by the cross-examination of counsel for the prosecution and it is often rejected by the bench. In England, too, there survives, for what it is worth, some safeguard against the stifling of a prosecution inasmuch as anybody has in theory a right to prosecute, and a "voluntary bill" has in certain cases been submitted direct to the grand jury. In Scotland prosecutions are in the hands of public officers known as procurators fiscal. The Lord Advocate has a general responsibility for such duties as are discharged in England by the Director of Public Prosecutions; but ordinarily the decision to prosecute or not to prosecute is taken by advocate deputes in Scotland. It is easy to think of valid reasons why, when several persons are initially accused of a crime, some of them may not ultimately be placed on trial. Evidence against some may be inadequate—an important consideration where the charge is one of conspiracy. Or some may be released in order to assist the prosecution. Ill-health too may be an element, since, if several men are charged together, it would not be fair to postpone trial indefinitely till one of them recovered from illness. It is unfortunate that the allegations made in the House of Commons leave the public in doubt as to what really did happen. Until particulars are available and proper inquiry has been made, the suggestion of impropriety in the signing of medical certificates need not be taken too seriously. Every medical practitioner knows that not only he himself but the whole of the medical profession will be judged by the standard of truth in the certificates he signs.

Customs Offence by Doctor

Learned writers have classified offences as *mala in se* and *mala quia prohibita*. There is greater moral obliquity in doing something wrong in itself than in doing something which is merely wrong because it is forbidden. In the latter category revenue offences may be placed, and here the reprehension will be a matter of degree. The morning newspapers of Feb. 18th reported proceedings against a London doctor who had been summoned at Dover the previous day for attempting to evade customs duties. A representative of the Customs said the accused was bringing back surgical instruments from Germany. Asked in the usual way if he had anything to declare, he produced two gramophone records and two woollen articles. Asked if he had anything else dutiable, he answered in the negative. When 12 pipettes and two surgical needles were found in a suit-case, he said he had done wrong and should have declared them. He said he had nothing else dutiable, but on the back of the car which he had brought over on the boat was an autotonograph, an instrument

used in research work in connexion with blood pressures. He said he did not declare it because he did not want to unpack it, and he did not see wh y he should pay on his own goods. At first he said he had taken it to and from Germany; afterwards he said he bought it in Germany three weeks before and had not yet used it. The Customs representative invited the magistrates to take a serious view of an offence committed not by a poor or ignorant person but by one who was well able to pay the duty. The accused, who did not appear, pleaded guilty. A fine of £150 with £6 10*s*. costs was inflicted.

BERLIN

(FROM OUR OWN CORRESPONDENT)

SPECIALISTS AND THE MEDICAL TARIFF

An important judgment has been given by the Supreme Court at Leipzig in respect of the official tariff which regulates the fees of medical men in cases where no previous arrangement has been made. This tariff is equally binding on doctor and patient, but hitherto there has been some doubt whether it applies to specialists. Now, however, the court has decided that the whole medical profession must charge according to the official tariff in cases where no agreement has been reached, and that there is no precedent which exempts university professors and well-known specialists. It was held that it would be difficult for a local court to decide in a particular case whether a certain medical man was an authority in his special branch of medicine whose scale of charges would therefore be unaffected by the tariff. Patients are recommended to come to an agreement with their medical attendant about the fee before treatment is begun.

REFORM IN MEDICAL STUDY

It has always been regarded as a disadvantage to the German medical student that though the theoretical lectures he attends are excellent his opportunities of coming in contact with patients before a late stage of his career are slight. Medical teaching is exclusively in the hands of the universities, and in the university vacations it is interrupted. During the last summer vacation, however, the Virchow Hospital in Berlin arranged for students to work in the hospital. They lived in the hospital and did regular service in the departments which they had chosen. They began work early in the morning and carried on till noon, when the cases seen were discussed by the staff and the students. The students were invited to ask questions which were at once answered. The arrangement has proved a great success, and it is proposed that during the Easter vacation students will again be allowed to work in the hospital. This innovation is of fundamental importance, since it would open to the students the immense field of clinical material to be found outside the university clinics in other hospitals, especially in the great cities, which is at present lost to them. The medical staffs of these hospitals, men of the highest competence, would then also be available as teachers. The first step towards a reform has been made, and it is to be hoped that others will follow.

EVIPAN NARCOSIS

The compound evipan used to produce a quick and deep sleep [1] is recommended also as an anæsthetic in operations. Dr. Weese reports that with an intravenous injection of sodium evipan anæsthesia of short duration rapidly develops. The chief surgeon of the Martin Luther Hospital in Berlin, Dr. Baetzner, reports that in about 400 operations he has injected 8–10 c.cm., the result being that the patient at once fell asleep. The surgeon was able to begin the operation immediately after the injection, and the narcosis lasted 15–20 minutes, after which ether can be employed if need be. Dr. Holtermann, of the gynæcological clinic of Cologne University, also reports favourably on the results he has obtained.

[1] See THE LANCET, 1932, ii., 1294.

A GREAT JOURNAL

Eighty years have elapsed since the first number of the *Münchener medizinische Wochenschrift* appeared and it is therefore the oldest of the great German medical weekly journals. It was founded under the name of *Ärztliches Intelligenzblatt* as the organ of the Bavarian medical profession, and had in the first year of its publication only 1000 subscribers. In 1883 the *Intelligenzblatt* became a medical weekly journal under its present name. In 1932 not less than 1150 original articles were printed in it, and there are now 15,000 subscribers, in nearly every part of the civilised world.

ATTEMPT OF SUICIDE WITH ASPIRIN

Cases of suicide by means of aspirin are rare. A case of this kind is described by Dr. Mann, of the Hanover municipal hospital. A man was brought there who had taken 60 tablets of aspirin of 0·5 g. each. He had a temperature of 36·1° C. and cyanosis. The pulse-rate was 82, but no abnormal cardiac signs were discovered. In the course of his illness œdema developed, although his general state had improved, and later an enlargement of the heart was noted. The œdema disappeared under the influence of digitalis. The starved condition of the man when he attempted to commit suicide, the direct action of the salicylates, and the strain on the heart when the man got up all combined to cause the injuries to the heart at such a late stage. To combat the noxious action of excessive doses of salicylates the administration of bicarbonate of soda is recommended.

SHOULD PATIENTS WITH ERYSIPELAS BE ISOLATED?

A man suffering from disease of the ear which he attributed to the war was conveyed to hospital for observation on behalf of the Court for War Claims. He had at the same time tuberculosis of the knee-joint with an open fistula. In hospital he was in the same room with a patient with erysipelas, and when he was discharged an erysipelas infection developed in the fistula at the knee. He accordingly brought an action against the hospital to recover the costs and damages caused by the erysipelas, alleging that the medical staff had acted negligently in taking him in a room with a patient suffering from erysipelas. The local court dismissed the action, pointing out that according to the opinion of expert witnesses it was doubtful whether an isolation of erysipelas patients was necessary. They gave evidence that eminent surgeons had never isolated such patients whilst others of the same renown had done so. On appeal the High Court of Leipzig reversed the decision, saying that even if medical scientists disagreed about the necessity of isolation it was the duty of hospital physicians to adopt the most painstaking measures of precaution.

INTENTIONAL LEAD POISONING

A turner complaining of lead poisoning was admitted to hospital, and there it was discovered

that his wife regularly brought him sandwiches in which a lead compound was spread. Since it was assumed that the man had been dosing himself in the same way before his admission, with the object of gaining compensation for an occupational disease, he was at once discharged and prosecuted for fraud. On being found guilty he was sentenced to two months' imprisonment. Such cases are not very rare, and other similar incidents are reported in the journal for the insurance against accidents and industrial diseases.

TREATMENT OF HYPEREMESIS GRAVIDARUM

Dr. Heesch, of the Hamburg General Hospital, reports good results in excessive vomiting of pregnant women by feeding them through a duodenal tube. He first introduced 100 g. of glucose, this being the maximal dose which can be absorbed without producing glycosuria. At the same time the blood-sugar was measured. In severe cases albumin and fat were administered as well as glucose—namely, 30 g. of peptones, two eggs, and 50 g. of olive oil. No effect was observed at first, but later the patients stopped vomiting or vomited so little that they retained the greater part of their food. In none of his 15 cases did it become necessary to induce abortion, and in each case the pregnancy proceeded to term.

PARIS

(FROM OUR OWN CORRESPONDENT)

VENEREAL DISEASE A GROUND FOR DIVORCE

Is Grand Guignol a fantastic burlesque of life or is it, as much as any other type of play, a true picture of a side of human nature? A case which came up to the Court of Appeal in Paris last summer is discussed in the January issue of *La Prophylaxie Antivénérienne*. A medical man, with special experience in the treatment of venereal disease, knew himself to be suffering from syphilis in an infectious stage at the time of his marriage. Yet he deliberately infected his wife, and for several months he let the syphilis she had contracted from him develop without any treatment. He tried to hide the true nature of the disease from her and from the doctors he called in to attend her. Then a doctor summoned by his mother-in-law revealed his wife's condition and advised her admission to a hospital where the diagnosis of syphilis was confirmed. At this stage the husband made due confession to his wife and solicited her pardon. Knowing her religious sentiments, he hoped to play on them in order to induce her not to seek a divorce. This hope not being realised, he tried to counter his wife's action by a series of pleas, one of which was that, ever since his marriage, he had never enjoyed the free handling of the revenue from her dowry. In the first instance, he was ordered to pay his wife 2500 francs a month and 40,000 francs in damages. The Court of Appeal raised the damages to 200,000 francs. It should be added that communication of a venereal disease by one partner to the other in wedlock constitutes in France a valid ground for separation or divorce if it is proven that such communication inflicts serious injury.

ORAL VACCINE FOR UNDULANT FEVER

In a communication to the Academy of Medicine on Jan. 10th, Dr. J. Hababou-Sala, formerly of the Hygiene Institute of Strasbourg, gave a short account of certain promising experiments with vaccines given by the mouth to 15 patients suffering from undulant fever. The "mélitine" vaccine was prepared at the Pasteur Institute of Tunis, and the abortine was prepared by Dr. Hababou-Sala, from five different strains of *Brucella abortus* provided by Prof. Bang himself. The patients were given 0·5 c.cm. of the appropriate vaccine on an empty stomach in the morning in a little water. In the most serious cases as much as 1 c.cm. was given. This treatment was usually continued for 8 to 10 days. In 10 of the 15 cases the disease had already lasted from 10 days to a month; in the remaining cases apparently still longer when this treatment was instituted. After the first dose the temperature did not rise as usual in the evening, and next day it remained below 37° C. Apart from this sudden and definite fall of temperature, many of the patients are reported to have experienced, on the day following the first dose, a euphoria which contrasted remarkably with their previous lamentable condition. Other sequels were a sudden return of the appetite and cessation of vomiting, excessive perspiration, and pain in the joints, epigastrium, and back of the neck. Twelve such recoveries were recorded among the 15 cases. In one case the disease ran a benign but obstinate course of 45 days, and two cases seemed to be refractory to this treatment. Dr. Hababou-Sala had thought of presenting a report on his experience with this treatment to the congress held in Marseilles last September on diseases of the Mediterranean littoral, but knowing the capricious character of undulant fever and its tendency to relapse, he decided to wait. Among his 12 successful cases, two have now been followed for more than a year, and the remaining 10 for about three months without any relapse being observed.

SHELL-FISH WASHING IN THE MEDITERRANEAN

Dr. M. Teissonnière has collected some striking information about the shell-fish industry in the Mediterranean. The three chief centres deal with 7,570,000 kg. of mussels every year. They are consumed locally or exported, mainly to Algeria. Each mussel filters about 5 litres of water every hour and when, as often happens, this water is polluted to the tune of 10,000 colon bacilli per litre, it needs only a small arithmetical effort to calculate the hypothetical concentration of germs in such a living filter after only a few hours. The problem merges from the hypothetical into the distressingly actual when it is realised how prevalent are the water-borne diseases in the Mediterranean area. Dr. Teissonnière points out in the January issue of the *Annales d'Hygiène Publique, Industrielle et Sociale* what a large proportion of water-borne diseases, notably enteric fever, occurring on the Mediterranean coast have been traced to shell-fish. He believes that this state of affairs could be remedied by general measures for improving the conditions under which shell-fish are produced and sold, and also by education of the public. With regard to the former point, he gives an interesting account of a recently started private enterprise, the "Parc Salubre à Coquillages," whose 20 basins, each 16 metres square, can house 40,000 kg. of shell-fish at a time. The sea-water is thrice filtered on the principle adopted for the water-supplies of towns, and 3000 cubic metres pass through the basins in 24 hours. By paying 80 francs a week for two square metres, the fishmonger obtains accommodation for 250 kg. of shell-fish. His oysters he sells by the dozen, and their weight is, accordingly, of no material moment. But he sells

his mussels by weight, and a gain of 4 to 5 per cent. after immersion must do much to compensate him for the cost of parking his shell-fish in this bath.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

TUBERCULOSIS IN SOUTH-EAST SCOTLAND

THE sanatorium at East Fortune serves all the local authorities within the seven south-eastern counties of Scotland. Its experience, therefore, is fairly representative of a large rural and industrial area. The total beds began at 200. The admissions in 1926 went as high as 284; in 1932 they were 248, and it is still difficult to meet the demands of counties with waiting lists. The average period of residence has again risen and last year was 509 days, the highest ever reached. The periods for the previous three years were 442, 455, and 475 days. Each patient is treated on the merits as to time. Of the admissions, 133 (54 per cent.) had lung disease; 99 (39 per cent.) had disease of other parts. Sixteen patients (6·5 per cent.) did not suffer from tuberculosis. The numbers of these are going down. Dr. Charles Cameron, the superintendent, lays emphasis on the fact that, although the Scottish tuberculosis death-rate as a whole is falling, there has been no fall in the mortality among young adolescent women. In some areas, indeed, this death-rate is actually rising. Unknown factors may be at work, but one cannot but feel (says the report) that life at these ages is not lived hygienically, that hours of amusement encroach seriously upon times of rest, and that, among those with restricted means, an increasing expenditure upon superfluous externals and a diminishing expenditure upon the internal necessities of existence are leading to that toll which nature levies for infringement of her laws.

These generalities, so far as they are grounded on cases actually investigated, are relevant; but there is always danger in assigning cases to abstract causes. Taking the figures of the report as a whole, one is inclined to ask for definite information on the "real wages" of the area, which is an index of the adequacy or inadequacy of the protein diet. Possibly, too little is spent on food; but this cannot be taken for granted. It should be possible, on the large scale, to get positive facts as to the "dole" and the proportion of dole patients in the various sanatoriums. Food rather than amusement is probably the main factor.

ECONOMY ON CHILD WELFARE WORK

Some anxiety has been aroused in Glasgow by the fact that the corporation, as part of its so-called economies, has seriously reduced its grant to the Royal Maternity Hospital for child welfare and antenatal service. Up till now the corporation's contribution has gone to this work alone, which the hospital could not conduct without it. The chairman of the directors has made a vigorous protest against the reduction of the grant, which, as is well known, had been applied with enthusiasm and skill. Possibly, the protest may induce the corporation to reconsider its decision. It is not encouraging that a huge corporation like Glasgow should withdraw support from a first-class institution like the Royal Maternity Hospital.

THE PAY-BEDS EXPERIMENT

The Glasgow Victoria Infirmary has now had enough experience of the "paying patient" department to speak with some authority. The chairman of the governors says that patients with whom he has spoken have expressed great appreciation of the work done for them. Some of these would have been treated in the infirmary without cost if the department had not been established. It is found that the great majority of patients who are able to pay something for their treatment are willing to pay according to their means rather than go into the voluntary department. The governors are now, it appears, faced with a waiting list for the paying department, and they propose to enlarge the accommodation. This is a very gratifying result. No doubt the fact that the new municipal general hospitals have power of recovery according to means is pressing the voluntary hospital world in the same direction. Meanwhile, the general subscriptions have to be kept up. On this particular hospital there was a deficit last year of £3314. The employees of the area had contributed £10,313, but this was £700 less than the year before.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 18TH, 1933

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 20 (last week 25); scarlet fever, 1646; diphtheria, 788; enteric fever, 12; acute pneumonia (primary or influenzal), 2228 (last three weeks 4821, 5151, 4106); puerperal fever, 41; puerperal pyrexia, 126; cerebro-spinal fever, 62 (last three weeks 66, 90, 84); acute poliomyelitis, 6; acute polio-encephalitis, 1; encephalitis lethargica, 10; dysentery, 26; ophthalmia neonatorum, 69. No case of cholera, plague, or typhus fever was notified during the week.

The notifications of acute pneumonia (primary or influenzal) exceeded the expected notifications by only 8 per cent. in England and Wales, and were 5 per cent. below expectation in the County of London.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 21st–22nd was as follows:—Small-pox, 64 under treatment, 3 under observation (last week 60 and 6 respectively); scarlet fever, 1547; diphtheria, 1557; enteric fever, 6; measles, 295; whooping-cough, 649; puerperal fever, 24 (plus 13 babies); encephalitis lethargica, 232; poliomyelitis, 1; "other diseases," 323. At St. Margaret's Hospital there were 12 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 27 (1) from measles, 8 (3) from scarlet fever, 52 (15) from whooping-cough, 35 (8) from diphtheria, 39 (13) from diarrhœa and enteritis under two years, and 630 (130) from influenza.[1] The figures in parentheses are those for London itself.

Reported deaths from influenza are now fewer than for any week of the present year. The only towns which reported 20 or more deaths were as follows, last week's figures being given in parentheses: Manchester 34 (41), Liverpool 21 (33), and Hull 20 (40). The annual death-rate (per 1000 population) from influenza did not exceed 2, except in the eastern area (3·25), south-western (2·49), Wales and Monmouth (2·79). In the midland area it was down to 1·21.

St. Helens reported one death from enteric fever. Eight fatal cases of measles were reported from Liverpool, 4 from Hull. Of the deaths from whooping-cough 5 occurred at St. Helens, each 4 at West Ham and Leeds, 3 at Leicester. Diphtheria claimed 4 victims at Hull and at Leeds, 3 at Liverpool.

The number of stillbirths notified during the week was 274 (corresponding to a rate of 41 per 1000 total births), including 48 in London.

[1] For the week ended Feb. 25th the figures for influenza were 344 (74).

FORSTER GREEN HOSPITAL FOR CONSUMPTION.—This Belfast hospital has been enlarged by the addition of 44 beds. Three wards have eight beds each; the majority of the remainder are in single-bed wards. The floors are laid with blocks of Australian jarrah wood; the south wall of the large recreation room is entirely of glass.

CORRESPONDENCE

DICHOTOMY

To the Editor of THE LANCET

SIR,—The alternatives before me are to connive in dichotomy or to lose a large part of my practice. This may seem a personal matter, a private dispute between my conscience and my pocket; it is because I believe it to have a far wider significance than this that I venture to bring my experience to your notice.

Dichotomy may be classified into three main groups. The first, which includes all those cases in which the general practitioner and the consultant amicably conspire to split the fees between them, does not concern me. I have never been a party to such practices, and, for reasons that will be obvious, know nothing about their prevalence in our profession. Unfortunately, those who grow fat on them maintain a reticence on the subject that makes it impossible for the rest of us to benefit from their valuable experience. But of the other two groups I know a great deal. In the one I include all those cases in which the practitioner, too proud to beat about the bush, too honourable to hide his intentions, informs the consultant beforehand of his decision to take a slice out of the fee which the innocent patient imagines to be for the consultant alone. In the other are those cases in which the consultant's first intimation that there has been dichotomy comes after the event, when he is presented by the practitioner with a smaller, sometimes considerably smaller, amount than he arranged to exchange his services for.

Here are two recent experiences, one of each kind. A general practitioner called me in to perform an abdominal operation. "I have arranged with the patient," he said, "that your fee [my fee, if you please!] shall be 75 guineas, of which I am taking 30 myself." No nonsense about this practitioner; nothing could have been fairer than his statement of the terms; nothing more generous than his decision to give the lion's share to me; and, for my part, all I had to do was to submit to blackmail or lose what might prove to be a valuable connexion. As I handed him the cheque he blandly said, "These are the only plums we general practitioners get."

The second case is also recent. On this occasion the practitioner was above the sordidness of discussing fees beforehand, but after I had operated on the patient sent me a fee of 20 guineas. Not much, I said to myself, but these are hard times for patients as well as doctors. A few weeks later the patient came to see me again about an apparent recurrence of symptoms, and in the course of conversation I said, quite casually, "By the way, what did I charge you for that operation?" "Sixty guineas," was the reply. "Quite," I said, and then, "let me remember, did that, or didn't it, include your own doctor's fee for looking after you before and after the operation?" "Oh, no," said the patient, "I paid a separate account for that." Forty guineas commission on a 60-guinea job, and a separate account on top of that!

I would not trouble you with a recital of these cases were it not for two things. First of all, they are typical, so typical, indeed, that I could tell you of others, similar in all essentials, in connexion with over half the practitioners who call me in. And in the second place, these cases are significant because the ethical code of our profession does next to nothing to prevent their multiplication. If I, a young surgeon, followed my conscience and told such practitioners that I would have no truck with dichotomy, they would tell me to go to the devil. I speak from bitter and costly experience. I, who loathe dichotomy, find myself practising it, simply because my only alternative at present is to divert a large part of my practice to surgeons who are not troubled with these old-fashioned scruples.

May I suggest as a remedy the formation of a professional organisation of consultants which, just as the trade-unions tend to help up the standard of life of their members by making it impossible for any of them to accept lower pay than the rest, could deal with the evil of dichotomy by imposing upon all its members the obligation of never conniving at it, no matter what the form may be in which it presents itself.—I am, Sir, yours faithfully,

London, W., Feb. 21st. UNWILLING ACCOMPLICE.

*** Of the occurrence of these practices we have evidence, but not of the prevalence suggested by our correspondent.—ED. L.

MOBILISATION OF SUGAR INTO THE BLOOD DURING REST

To the Editor of THE LANCET

SIR,—A boy of 7½ years was recently put under my care for diabetes mellitus of several years' standing, since it was found that his glycosuria and acetonuria were getting out of control. He had had a fixed daily quantity of insulin—I think 18 units—with a fairly constant diet.

I began by putting him on a rigorously exact diet of 1000 cal., his weight being a little over 3 st. 1 lb. He gained 3 lb. in a fortnight, but his blood-sugar showed what appeared to me to be remarkable nocturnal fluctuations. At the beginning of treatment he was having morning and evening doses which I hoped would be able to be determined by the evening and morning urine respectively, but he was very shortly reported to be having attacks of sweating and pallor about four to five hours after the evening dose of insulin, in spite of the fact that the morning urine was loaded with sugar. Estimation of the blood-sugar showed a figure of 0·055 per cent. four hours after the evening insulin dose, whereas ten hours later—that is, following the period of normal sleep and absence of food during the night—the figure rose to 0·35 per cent., the urine being then, of course, loaded with sugar.

In order to counter this state of affairs, it was determined to give the doses of insulin at eight-hour intervals instead of twice a day, raising or dropping the morning, afternoon, and midnight doses by one unit according to the presence or absence of glycosuria four hours after the time of corresponding previous injection. This plan has so far succeeded, but it is interesting to note that of the three doses thus regulated, the midnight one is the highest, although it precedes a period of complete rest and of eight hours' starvation; that is to say, much less sugar is found in the specimens of urine taken four hours after the morning and afternoon injections than in the 4 A.M. specimen. (I may say that every care has been taken to see that the patient could not get any nourishment during the night hours.)

It seems impossible to resist the conclusion that, in this case, during the night sugar is mobilised from the tissues into the blood more quickly than during the day, when the boy is up and about and taking a diet easily enabling him to maintain weight and good health. I should be very interested to know the experience of others in this respect: is the mobilisation

of sugar into the blood a normal nocturnal phenomenon corresponding to the nocturnal fall of temperature and pulse-rate? One would have thought the contrary; it seems more likely to be correlated with the diminished oxidation and output of CO_2 which accompanies the resting hours.

I am, Sir, yours faithfully,

MARTIN O. RAVEN.

Broadstairs, Kent, Feb. 25th, 1933.

LYMPHOGRANULOMA INGUINALE

To the Editor of THE LANCET

SIR,—May I be permitted to thank Dr. Hanschell for drawing attention to a point which he suggests I had not made quite clear? Until some better nomenclature has been introduced it is still useful to apply the term lymphogranuloma inguinale to cases in which infection has been acquired in temperate countries, sometimes referred to as poradenitis nostras, while reserving the name climatic bubo or poradenitis tropica to those infected in the tropics. When I said that I believed cases of lymphogranuloma inguinale were possibly going unrecognised in this country, I quoted the figures of the Royal Albert Dock V.D. clinic, among others, merely as showing that my opinion was not shared by every one. I did not suggest that cases were being missed at that clinic. It is the one V.D. clinic perhaps where unrivalled opportunity exists for the diagnosis of lymphogranuloma inguinale (poradenitis nostras), as to the same clinic come a continuous stream of seafarers suffering from climatic bubo (poradenitis tropica). I am, Sir, yours faithfully,

HUGH S. STANNUS.

Wimpole-street, W., Feb. 25th, 1933.

CONTROL OF INFECTIONS IN CHILDREN'S WARDS

To the Editor of THE LANCET

SIR,—Dr. Spence's letter appearing in your issue of Feb. 25th serves a most useful purpose in calling attention to the subject of infection in the wards of children's hospitals. Its special importance lies in the emphasis laid on the spread of non-specific infections, especially those of the respiratory and alimentary tracts, among infants in children's hospitals. Dr. Spence's brief rules are admirable in most respects, though I cannot agree with the suggestion that infants should be segregated into groups of approximately the same age. I always try to distribute the infants' cots among those of the older children. In this way I think a certain amount of cross infection may be avoided.

The spread of respiratory infection can, to a large extent, be controlled by structural arrangements which limit the dissemination of infective material through the atmosphere. Gastro-intestinal infection, on the other hand, is probably carried directly or indirectly by the hands of the attendant. Faulty nursing technique is therefore its chief cause. In all but our most modern children's hospitals the facilities for exercising proper cleanliness are insufficient, and to my mind it is here that the chief fault lies. However well trained and however careful nurses may be, it is impossible for them to avoid errors in technique if they have neither room nor apparatus for employing their craft. The tools, not the workman, are to blame.

In my experience I have found that one is courting disaster if too many infants are congregated in a ward. The bad results are not due to insufficiency of staff but to the fact that only a limited number of infants can be properly attended to with the facilities available. In the treatment of sick infants perfect nursing technique is no doubt the primary necessity but, in the construction of new hospitals, more attention should be paid to the provision of ample accommodation and suitable apparatus for carrying it into practice if the dangers attending the residence of infants in hospital are to be avoided.

I am, Sir, yours faithfully,

GEOFFREY B. FLEMING.

Royal Hospital for Sick Children, Glasgow, Feb. 27th, 1933.

THE CLIMATE OF MADEIRA

To the Editor of THE LANCET

SIR,—The tepid oceanic currents bathing these subtropical regions seem associated with an immunity from chill which in the 72 years of my medical experience has been undisturbed by any serious departure from an established stability of temperature. For though we have suffered from unusual drizzle and cloudy skies the thermometer in this most trying season has hardly varied one degree from 57° F. at our official 9 A.M. reading. This is a winterless shelter in convalescence from "flu," pneumonia, and renal malady; and catarrhal chill, with consequent relapse, is hardly known in the revitalising sunshine of Madeira.

I write to point out that in spite of prevailing weather conditions our stability of climate here has suffered no serious transgression from its known quality; no winter resort has established conditions more potent in convalescence.

I am, Sir, yours faithfully,

Madeira, Feb. 10th, 1933. MICHAEL GRABHAM.

DYSENTERY AS A CAUSE OF SUDDEN DEATH

To the Editor of THE LANCET

SIR,—I was interested to read Dr. Eileen Harvey's paper in your issue of Jan. 28th, but the statement that fulminating infection with sudden death due to *B. dysenteriæ* Sonne had not been previously reported is incorrect. As long ago as 1921, K. Mita [1] described a series of 73 cases which included six deaths, of which three occurred within 36–60 hours from the onset. In 1925 W. G. Savage and P. Bruce White [2] reported three outbreaks of food-poisoning in one of which (No. 91) there was a case with death 18 hours from the onset. In 1928 I [3] reported the case of a boy, aged 10, who died 16½ hours after the onset; in this case I isolated the organism from the contents of the large intestine and from the enlarged lymph glands in the ileocæcal angle. In the same year F. H. A. Clayton and J. W. Hunter [4] reported a case which terminated fatally in about 13 hours. In all the above cases complete identification of the organism by isolation was made; in Dr. Harvey's case no such proof is forthcoming.

While it is perfectly true that infections with Sonne's bacillus are usually mild and clear up quickly, it is obvious that the possibility of severe and fatal types of infection with this organism has been recognised for some time.

I am, Sir, yours faithfully,

Liverpool, Feb. 23rd, 1933. W. HOWEL EVANS.

[1] Jour. Infect. Dis., 1921, xxix., 580.
[2] Med. Research Council, Spec. Rep. Ser. No. 92.
[3] Brit. Med. Jour., 1928, ii., 96.
[4] THE LANCET, 1928, ii., 649.

EARLY DIAGNOSIS OF MALIGNANT DISEASE

To the Editor of THE LANCET

SIR,—Dr. Lindsey Batten in his admirable letter sets out clearly what he considers the pros and cons of a periodic overhaul. He agrees that the chances of discovering disease in its early stages would be increased by examining patients without waiting for symptoms. Further, that it would bring about a "gradual extension and diffusion of knowledge and understanding of the normal," and he suggests that "a fair amount of good advice on personal hygiene would be spread abroad." After this promising opening, he decides against the general overhaul on the grounds that a number of unfortunate and unprofitable discoveries would be made. Surely, when a proper understanding of the normal has been recognised by the profession, such conditions will be ignored. Then he objects to my suggestion for a limited examination of the sites where accessible cancers arise on the grounds that it guarantees nothing at all. But such an examination *does* guarantee that there is no macroscopic disease in those organs.

It seems, however, that it is on psychological grounds that Dr. Batten bases the weight of his argument against examination of the fit. He does not seem to realise how very prevalent is the fear of cancer. How can it be otherwise when 56,000 families are added to the list each year of those who have lost a near relative? I am convinced that he is wrong in his belief that such examinations become "cumulatively alarming," or "even completely demoralising," and in my experience the fact that nothing was found on the last examination gives greater hope to the patient that nothing will be found on the next occasion.

His final objection is entirely from the doctor's point of view—namely, that he will some day find a patient with an inoperable growth in spite of the fact that a periodic overhaul has been carried out six months previously. This idea that a growth in the accessible sites develops at such a rate is due to the fact that the medical man sees the patient for the first time when the growth is already advanced, and *hears from the patient* that there was no symptom or sign a short time previously. In considering Dr. Batten's letter generally, one feels that it emphasises the fact that students are not sufficiently taught how wide are the limits of normality, and for this reason the majority of practitioners are reluctant to examine a patient lest they should come across the normal and not recognise it.

In regard to your correspondent, Mr. Arnold Walker, I agree that none of us is infallible in the question of diagnosis, but I am surprised that he does not consider it justifiable to tell a patient with a laceration, or even a slight erosion, that there is no evidence of malignant disease. These are exactly the cases that should be examined every six months, and then, if there is any change in the picture, a section should be taken. Mr. Walker says that patients should be taught "to visit their doctors when they notice a change in the behaviour of an organ," but I should like to ask him what change there is in the behaviour of a breast when carcinoma is present in the early stages.

The "good doctor," if he knows anything about psychology, will realise that he cannot reassure his patient without stating that the examination reveals no sign of cancer. The general public are not so stupid as Mr. Walker appears to think. They only expect that those kinds of cancer which can be diagnosed should be excluded. It is the accessible cancers that the public think about most, because the distressing symptoms of ulceration, &c., are most obvious, and my contention is that such periodic examinations will satisfy a very large proportion of the public, and allow them to go about their work thinking only of health, and not of disease.—I am, Sir, yours faithfully,

Harley-street, W., Feb. 28th. MALCOLM DONALDSON.

CHLOROFORM CAPSULES IN CHILDBIRTH

FOR some time Queen Charlotte's Hospital and Middlesex Hospital have been experimenting with the use of crushable capsules of chloroform as a means of lessening pain in childbirth.[1] Good results have been recorded, and the National Birthday Trust Fund recently offered to supply capsules to any institutions and practitioners that would give them a trial and send a report of the effect on the pain felt by the patient, and on the normal course of labour. A total of 2000 reports have been returned by 42 hospitals and 56 private practitioners, and these were analysed by Mr. L. Carnac Rivett in a paper read at a meeting of the Fund in London last Monday. In all these cases, he said, not one maternal death has occurred, and in the very few cases of stillbirth it was definitely stated that death could in no way be attributed to the chloroform capsules. "Our experience at Queen Charlotte's Hospital and Middlesex Hospital has been the same; we have administered the chloroform capsules to nearly 4000 patients, and no maternal or infant deaths have been caused by the capsules. . . . At both these institutions the midwives are already using these chloroform capsules with success, and at Queen Charlotte's Hospital we are now instructing practising midwives how to use them."

In over 90 per cent. of the records, Mr. Rivett said, the patient obtained relief from pain. In over 50 per cent. of the cases it was noted that the patient felt great relief. In about 5 per cent. the patient became excited and refused chloroform at all; but such excitement might occur during the administration of any anæsthetic, and therefore these few failures were to be expected. In over 60 per cent. of cases it was recorded that the course of labour was not altered at all; in about 15 per cent. the use of capsules were said to assist the progress of labour by abolishing the actual pain and allowing the natural powers to act unhindered by restraining efforts of the patient. Occasionally labour was prolonged but the delay was never serious, and the number of cases in which instruments were used was below the average. Perhaps, however, this was partly because the capsules were for use in normal cases.

After quoting some of the opinions expressed by practitioners who had used the capsules, Mr. Rivett concluded by saying: "This is a completely safe and foolproof method of relieving the intense pains of childbirth, and one which is easily learnt at a very short course of instruction. It is a method eminently suitable for use by nurses and midwives in institutions where there is a resident medical officer." But there must, he added, be two nurses. It was not convenient for one midwife alone to administer the capsules and conduct the labour.

[1] See THE LANCET, 1932, ii., 191, 1015, 1024, 1070, 1132.

PETERBOROUGH HOSPITAL.—Last year the Peterborough and District Memorial Hospitals received 1786 in-patients, the largest number hitherto treated. Their average stay was 22·65 days, as against 23·49 in 1931, and their average cost was £5 17*s.* 7*d.*, a reduction of 11*s.* 6*d.* on the previous year. Out-patients cost 11*s.* each, a reduction of 1*s.* 0½*d.*

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XVII.—IN THE DEPTHS OF THE COUNTRY

THERE must be many readers of THE LANCET who know little of the life and work of the purely country doctor, and who can hardly appreciate the "doctor's day" of the man who lives in a village working single-handed. And to be single-handed is a very important factor in his life, for he works with no professional neighbour near at hand, far from a hospital, and perhaps unable to secure the assistance of an ambulance.

I must leave to some extent to the imagination the make-up of any single day in such a practice, while I describe rather what any day may bring forth. In doing this it is impossible not to seem to be merely reminiscing; yet, while country medical practice has been revolutionised in the same manner as the whole of society by the advent of the motor-car, there remain in isolated country practices instances when bygone habits might to-day be more convenient than those of which an advancing twentieth century has compelled the adoption; and there are places where quite old-fashioned customs must persist.

But speaking generally, before the arrival of the motor-car the country practice had a very different pattern, so different that I am ready to believe that many real country practices have ceased to exist; the outlying communities have learned to dispense with the doctor on the immediate spot because of the facilities offered by car and telephone for obtaining medical assistance from the nearest larger centre. Still there remain some of us who have once practised in the heart of the country under the old conditions and amenities, and who, continuing to practise under the new conditions, appreciate their advantages, but none the less are compelled sometimes to make unfavourable comparisons. The vast differences in the scientific position of the medical profession as far as the knowledge of disease was concerned were not, I am compelled to think, reflected in quite the disadvantageous way in practice that younger men may think, despite the simpler machinery of professional life. My predecessors were good doctors, and I found myself able to practise my profession in accordance with what I had learned. This is not to say that I consider that society has not benefited by our scientific progress; but I want to suggest, as one who practised in a purely rural district when the telephone was in its infancy and the motor-car was unborn, that the mechanical developments of the age have not brought about a millennium.

MAINLY REMINISCENT

I live in a village of some 600 inhabitants. There are half a dozen other villages at a distance of some four to six miles away, and within the area thus comprised there are six large country houses, the old centres of rural life. The country side is sparsely inhabited, the occupations are entirely agricultural, and, incidentally, most of the country houses are deserted (their original owners feeling the stress of high taxation), or transformed into week-end resorts. There are two small country towns which lie respectively nine and ten miles north and south of my house. These now have each a cottage hospital, but the nearest general hospital of any size is 25 miles away.

I came here 40 years ago after some experience of practice in a mining district and in two large towns. The fact that that life I led did not appeal to me proves, I think, that I belong to the kind of man who would sooner starve in the country than make a fortune in the town and there must remain some like me; they will find it difficult to exercise their preference. I live in a Jacobean house which has been the home of a line of country doctors, all of one family—father to son—for four generations, and the continuity, I like to think, is not broken, for my wife was a daughter of the last of this series, and if my doctor son succeeds me here the long line will be continued. My predecessors were all horsemen, they were hunting men, and some of them farmed while carrying on their practices. They went their long rounds either on horse-back or open gig in all weathers, and at all times wore a silk hat—this was their badge of a professional life. They began the day's work between seven and eight in the morning and did not get home till evening on a big day's round. This meant keeping three or four horses all the year round. In my first 25 years the only means of transporting patients to hospital was by horse vehicle, and all kinds of contraption were pressed into the service. For lying down cases a flat cart open to the weather was usually employed, and a long journey in, or rather on, such a thing was a grave ordeal. Yet I have seen serious cases of all sorts, acute abdominal patients and patients who had sustained compound fractures, transported apparently with no serious damage to the hospital, though it was often difficult to impress upon them the necessity of going there, because of the terrible reluctance on the part of many of them to enter a hospital in any circumstances. This led to the performance of many operations in the homes of the patients, but treatment on the spot did not necessarily mean a saving of time for the patient, for it might easily take the doctor as long to get to the patient as it would have taken the patient to get to the hospital.

During my term of practice surgery has enormously progressed, but looking back, I am amazed at the good results we got then considering the difficulties. When called upon to operate to-day in a case of appendicitis I have to remember that I saw many cases of what was called "inflammation of the bowels" 40 years ago, and that, though some of them were very ill, a surprisingly high proportion slowly got better without surgical interference. I am not belittling scientific progress, but am noting that its effects are not generally perceptible in an isolated country practice. I can go back to the days when a woman might lie in the clothes she was confined in for a week, because "it was the custom," and I remember the fights which I had with the old country midwives when I wanted their patients to receive proper attention. They simply would not obey, and said that washing and changes of linen would be dangerous. When I once did the necessary offices myself in face of opposition, I was told that if anything happened the woman's death would be at my door. I saw my first death in childbed 30 years after that, and although the child was born naturally and the placenta expelled before my arrival and the patient had a nurse, she died of puerperal septicæmia on the tenth day. The person who would consider this as an argument against scientific progress would be a lunatic; I mention the case to show how such enigmatic happenings prejudice the bucolic mind against necessary improvements. In practice here I have had only once to have recourse to craniotomy; that was 35 years ago, and I have found it necessary to perform one Cæsarean section, two years ago, in something over 1200 cases of midwifery. Cæsarean section is, of course, now done in circumstances when in earlier years the procedure would not have been contemplated. I have had to tackle cases of placenta prævia and various malpresentations single-handed, under anæsthesia produced in the most unfavourable conditions, and have been fortunate in having no fatalities, although often the women were very ill. One had to act alone, there was no other way, and no near help.

THE MODERN CHANGES

In 1909 I ventured upon a steam-car; I do not want to dwell on my experience with that car;

I still had my horses and it did not serve as much relief to them. By 1912 the horses were finally displaced, and for the next ten years I did my work with a petrol car of French make which did not give me any trouble. If in a good deal which follows I compare, for such work as mine, mechanical transport with horse-driven vehicles, sometimes to the disadvantage of the former, this is but one example of many that might be quoted of the way in which distinct benefits are bestowed upon the community by developments which are not necessarily well fitted to universal needs.

I have now reached the period in this personal story when the National Health Insurance Act came on the scene. This Act has had its advantages, but in such a practice as mine its disadvantages from the pecuniary point of view are obvious. The fact that before the passage of the Act the sums paid per annum for attending the servants in the large country houses were a useful asset must be mentioned, but of course the Act had no direct influence in emptying the houses. As a matter of fact, the time had gone by before I began to practise when the master of the house not only paid his servants' bills, but often those of his guests as well. Under the first conditions of the Act the total capitation fees which I received from the servants in these houses did not amount to the sum that used to be expected from one of the great houses, so that until the mileage fee was arranged the Act was a dead loss to the country doctor.

A great part of my life, and of those who practise on the same lines, is occupied by going to and fro—this is often forgotten. Village life no longer forms a centre of medical practice, for village industries are largely dead; the old kind of inhabitant living on from generation to generation in the same house and carrying on the family trade has gone. I may have to travel 40 miles in a day seeing only four or five patients; on other days I may have to see double that number, and in this district 10 or 12 professional visits makes a very long day's work. It is then that I sometimes think that the horse had his great merits, and I often wish I had a horse. I travel to inaccessible places to which no motor can get, and this means walking over marsh and moorland. I sometimes have three or four gates to open and shut on a by-road, and this means much trouble getting in and out of a car, which was absent when riding. I have often, on a dark stormy winter's night, had to improvise a stretcher and get help, sometimes from over a mile away, to carry an acute surgical case across a heathery moor in mud or slush to a waiting car, and then to go 25 miles to the hospital.

Motor traffic has further brought great responsibilities. I have frequently had people brought to my house after a motor smash, generally on a Sunday afternoon or evening, week-end drivers being numerous. Fractured skulls and compound fractures of thigh and leg may then have to remain (with their immediate needs seen to it is true) for hours before they can be removed. And more than once the victim of these accidents had been shot over a neighbouring bridge into the river, and was brought to my house not only badly injured but half-drowned. These are samples, and not very exceptional ones, of what a country doctor may have to do, and such occurrences do not come the way of any other type of doctor; they bring grave responsibility when there is no hospital handy. And of course in ordinary routine I have to treat fractures in the homes of the people where the cases in urban practice would inevitably be sent to the hospital.

THE EVIDENCE OF A COLLEAGUE

I have shown these notes to a colleague and friend who practises a few miles from me, but in the hills and dales. His district is probably one of the most difficult in all England. He confirms what I have said and could add to it with some striking reminiscences of his own. His district is sparsely populated and, until he was able to secure payment for the travelling expenses, it was impossible to earn enough money to live, for his time was so fully occupied in getting there and back. He finds the benefit of the car, and reminds me of certain obvious disadvantages in the use of the horse. When he was dependent upon horses it was almost routine for him to have to drive five or six miles with a saddle carried in the back of the trap; at the necessary place the horse was taken out of the trap, saddled, and another five or six miles of riding would follow, and in some cases he had still not arrived at his destination, but was compelled to walk the last lap, leaving his horse tied to a fence. The car has mitigated this sort of thing for him, and the ordeal it must have been in winter and darkness can be imagined; but even now he may have to ford rivers in his car three times in one round, and finish the journey on foot with some risk in stormy weather of being unable to get back to the car, when he is compelled to walk an indefinite way home. He told me that once he got lost in a snowstorm on a journey like this, and in the darkness walked into a morass. He was then obliged to sit down on the first piece of solid ground that he could find and wait there till the light came, when he found himself two miles from his car, which was practically snowed up. These are experiences trying enough for the young man, and my friend is no longer young.

AND YET A CAREER OF CHOICE

Concluding with my personal experience, the real change in my professional life, next to the invention of the motor-car, was made by the installation of the telephone in my village. The telephone has now extended to surrounding villages, and many people in the countryside have it in their houses. This has revolutionised communications between doctor and patient, but it has also multiplied the number of calls, a certain proportion of which may be entirely unnecessary. When the messenger to the doctor had to walk, or drive, or, later, when he used the bicycle where it was possible, the doctor was only summoned when the case appeared to warrant it, now this need not necessarily be so. But undoubtedly midwifery practice has become more satisfactory. I still recall the time when the tramp of any horse in the village might wake me, a light sleeper, and if the horse stopped at my door, I knew that it would mean the rousing-up of a groom, the putting to of a horse, and, if I was detained at a confinement, I should have to send my man away with the gig to be put up where a place could be found. The telephone and the car have eased that situation.

The hardest thing in the life of the single-handed doctor is that he has always to be on the spot. He cannot ever get free for more than a few hours, without going to the expense of engaging a locum-tenent, and the income will too often not permit of this. Just a week-end off duty will be longed for but seldom obtained. No other type of practitioner is so tied up and unable to get help from a colleague. However, if we make our bed, so we must lie on it, and the life has its charms; and had I my time to begin again I would still be a country doctor. But there is only a certain type of man cut out for the job.

REDUCTION IN THE STAY OF IN-PATIENTS.—Last year Dewsbury and District General Infirmary received 1810 in-patients, an increase of 486 on the preceding year. Their average stay was 14·7 days, as against 19 days in 1931. At 6471 the out-patients increased by nearly 1000, and their attendances numbered 54,603.

VICTORIA INFIRMARY, GLASGOW.—This hospital, which expended £69,486 on maintenance account last year, had a deficit of £16,339. New in-patients numbered 8740; they stayed 19·2 days on the average, and cost £7 7*s*. 5*d*. each, as against £8 4*s*. 10*d*. in 1931. The cost per head was £141 10*s*. 8*d*., as compared with £150 8*s*. 5*d*. There is a waiting-list of about 300. Cases of motor accidents treated in the wards fell from 217 to 183, and 40 fewer were attended in the dispensary.

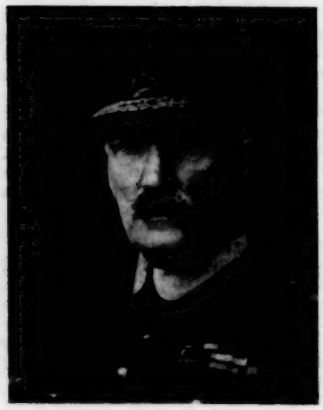
OBITUARY

SIR THOMAS JOSEPH GALLWEY, K.C.M.G.

LATE COLONEL COMMANDANT, R.A.M.C.

WE regret to announce the death of Sir Thomas Gallwey who, in 1916, was Director of Medical Services of the Home Forces, and who for more than half a century played a distinguished part as a leader in the Army Medical Service. His final illness was protracted, and his death occurred at Pelham-place, London on Feb. 25th.

Thomas Joseph Gallwey was the fourth son of the late Henry Gallwey, an Irish magistrate, of Tramore, Co. Waterford, and was born in 1852, being in his 81st year at the time of his death. He received his preliminary education at Stonyhurst and his medical training at the Royal University of Ireland, where he graduated as M.B., M.Ch. at the age of 21, and entered the Army Medical Service immediately. From the beginning he proved himself both a capable doctor and a good officer. He first saw service in the Afghan war, but in 1885, being little over 30 years of age, he was specially promoted surgeon major for services in Egypt. He made good use of great opportunities. For in 1885 the failure of the dual control by England and France of Egyptian affairs led to successful Arab revolts, the sending of British and French Fleets to Alexandria, the refusal of the Sultan of Turkey to assist in putting down the disorder, and finally to the intervention of the British Government, France and Italy having declined cöoperation. Gallwey was in the middle of all these events. By the Egyptian expedition of 1882 the revolt was suppressed at the battle of Tel-el-Kebir, and Gallwey received the medal with clasp and the Khedive's Star. He took part in the Sudan expedition when the Sudan was established as an integral part of the Khedive's dominions. Restoration of order in the province became a British responsibility, and when the defeat of the army of Hicks Pasha led to the rise of the Mahdi and the fall of Khartoum, where General Gordon was immured, the Nile expedition under Wolseley followed. It was a time of continuous struggle. The operations against Mahdyism during the 11 years from the end of the Nile expedition ended in the withdrawal from the Sudan, while the Dongola campaign constituted the story of the suppression of the Dervishes. The Sudan operations for the next four years were conducted by Kitchener as Sirdar of the Egyptian Army, and the Dongola campaign recovered the province for Egypt. In this expedition Gallwey distinguished himself, being mentioned twice in despatches and receiving British and Egyptian distinctions and the C.B. He dealt with particular success with an outbreak of cholera among our troops at the beginning of the campaign.



SIR THOMAS GALLWEY

[*Photograph by Russell*

In the following year, 1897, he was appointed P.M.O. in the Egyptian Army and was present at the battles of Atbara and Khartoum, and was again mentioned in despatches.

In 1898 there followed more military and administrative work of an important sort on the outbreak of the South African war. He was first appointed P.M.O. of an infantry division at Cape Town, and later P.M.O. in Natal, and, as had previously been his experience in Egypt, he was again in South Africa present at some of the most critical actions in the war, notably at Spion Kop and Colenso and the relief of Ladysmith. He was mentioned in despatches twice, received various military decorations, and in 1900 was appointed K.C.M.G. He remained in South Africa until his appointment as P.M.O. in India, a post which he held for four years with distinction. His administrative work proceeded efficiently and smoothly under his particularly acceptable personality, although the official side of medicine in India was already beginning to manifest its later troubles. At the expiration of the Indian appointment he returned to England as P.M.O. of the Aldershot Command and at the expiration of this appointment in 1911 he retired.

But not for long. Immediately on the outbreak of the European war in 1914 he returned to the Aldershot Command as Deputy Director of Medical Services. He was successful in discharge of the heavy responsibilities which fell upon him, his long and extraordinarily important official experience enabling him to manage men and affairs with promptitude and decision. At the close of the war he was made Colonel Commandant R.A.M.C.

This record of Sir Thomas Gallwey's life as soldier and administrator would be incomplete without reference to a side of his activities which played a vital part in his career. Gallwey was a really great sportsman. He was one of the founders of the Turf Club in Cairo, while he was the owner of two famous horses, "Hidden Mystery" and "Leinster," the former of which was favourite for the Grand National some 30 years ago. He won the Calcutta Cup at rackets in India, which corresponds to the home amateur championship at that game—the cup it is understood he gave to Lord Kitchener who was always a great personal friend. He was a fine polo player, and received a presentation cup for a victory over John Roberts at billiards when that great professional was touring India, the amateur no doubt receiving points. He organised for the military meeting at Sandown for over 20 years, and for a long period was a steward at Sandown and Kempton. Horse-racing was a passion with him.

Sir Thomas Gallwey married in 1901 Maud Margaret Howard, daughter of the late Capt. J. W. J. Giffard of the Hon. Corps of Gentlemen-at-Arms and widow of Capt. C. W. Gordon, R.A.

WILLIAM CHARLES BULL, F.R.C.S.

CONSULTING AURAL SURGEON, ST. GEORGE'S HOSPITAL

WE regret to announce the death of Mr. W. C. Bull, the well-known aurist, which occurred at his home in Clarges-street, Piccadilly, on Feb. 24th.

William Charles Bull was the son of Mr. Goodman Bull of Liverpool, and was born at Bromborough in 1858. He was educated at home and at Gonville and Caius Colleges, where he had a successful career as a student, and also won some prominence as a cricketer. He graduated in the Natural Science Tripos

and proceeded to St. George's Hospital, where, having obtained the M.B. degree at Cambridge, he served as assistant surgical registrar and house surgeon. In 1885 he took the diploma of F.R.C.S. Eng., and decided to specialise as an otologist, the impulse in that direction coming from the late Sir William Dalby, then aural surgeon at St. George's, and well known as a pioneer in this country of the modern system for educating the deaf subject. In 1892 Bull became aural surgeon at St. George's in succession to Dalby and was elected consulting aural surgeon to the hospital at the expiration of his time-limit on the active staff.

Bull was a very quiet man, and did not make, or try to make, the public impression which his attainments warranted. He was a good hospital officer, and, within limits which he laid down for himself, a careful and successful operator, but he devised no original methods either in the operating theatre or in his communications to medical literature. A competent teacher, a courteous companion, and a generous host, he was content to be those things, and he leaves behind him the reputation he would most have desired with a large circle of friends.

Bull leaves a widow and one daughter to whom we tender our sympathy.

One of his colleagues on the hospital staff writes: "Bull leaves a pleasant memory in the minds of all those who worked with him as pupils or as colleagues. Without making a strikingly notable figure at his hospital and school he yet achieved that solid appreciation which comes to a man who does his work well and conscientiously, who treats his patients with kindness, his colleagues with courtesy, and his juniors and friends with charming and abundant hospitality. The branch of surgery with which Bull was concerned had not in his years of active service at St. George's reached the pitch of elaboration to which it has now attained, but the aural surgery of his day he carried out efficiently and with marked success. Tonsils were then not necessarily removed in their entirety, and operations on the mastoid were less meticulously performed than is now usual, but these two procedures, which formed the backbone of his operation lists, were systematically executed by Bull with consistently satisfactory results. He was a good judge of a case, and it might be claimed that, as an aural surgeon, his greatest strength lay in diagnosis. In his earlier years Bull had wide experience with anæsthetics and this, as generally happens, made him a tolerant and understanding colleague for any anæsthetist working with him. He was a cool operator, who neither got worried himself nor worried those about him. Outside his professional occupations Bull devoted a good deal of time to works of art and had a nice taste in pictures. This same taste was shown in Bull's appreciation and choice of wine and of food and consequently to dine with him in the family circle was a delightful demonstration of how pleasant an hour may be passed with a few people of good taste and manners, and a knowledge of the world. In his young days Bull was suspected of tuberculous infection and gave up months to its cure in Switzerland. His ruddy complexion and fine figure were for years a striking proof that whatever his early ailment was it had been completely outlived. Much more recently, only about four years ago, he was obliged to undergo an operation for duodenal ulcer, but from this too he made a complete recovery.

PANEL AND CONTRACT PRACTICE

Mileage

INSURANCE practitioners who live in country areas necessarily have to travel further in the course of their panel work than those who live in a closely populated industrial area. A sum of £250,000 set aside to pay for the extra cost of travelling and the extra time is called the Mileage Fund.

The scheme is to make every doctor put in a claim to his insurance committee for mileage under a system of units, one unit corresponding to every mile over two miles from the residence to that of his doctor of each insured person. Thus, for an insured person living five miles away from his doctor the latter would be paid the ordinary standard rate of pay 9*s*. (less 10 per cent. at the present time), plus three units of mileage. Free choice of doctor enables a patient to choose one who is not necessarily the nearest; in some areas the mileage paid used to be calculated from the patient's home to that of his nearest panel doctor, but this arrangement was altered by the distribution committee a few years ago.

Each insurance committee receives claims from doctors in its area for mileage units and forwards these to the Ministry. The Ministry divide the £250,000 available for this purpose by the total claims for mileage, and the result of this division gives the value of the unit. The returns are periodically revised; the last figures were obtained in 1930 and used for the first time in 1931. The unit, as will be seen from the method of calculation, depends chiefly on distance and probably takes in sufficient account of time occupied.

Quite apart from places of difficult access like the Highlands or Lake districts, for which special provision is made, some panel patients live in lonely cottages several fields from the nearest road or in a lane, perhaps up a steep hill, guarded by gates which seem innumerable. At a recent meeting of the distribution committee the Ministry furnished interesting returns by 430 practitioners who were roughly divided into three groups: A, with many places of difficult access; B, with the average type of country practice; C, with no difficult places to visit, but a few patients living outside the two-mile limit of a mainly urban practice.

There were records of 104 practices of class A. Between them they travelled 1,219,722 miles; paid 173,095 visits to insured patients, and 274,138 visits to private patients. The number of insured persons on the lists were 86,244 and the units of mileage allotted 175,028. To reduce these figures to easier proportions we may assume that the mileage is divided proportionally amongst the insured and private patients according to the number of visits to each. Although the assumption is not necessarily correct the errors will be approximately the same for both sets of figures. On this basis the insured mileage figure works out at 463,594 miles which divided amongst 86,244 insured persons gives 5·4 miles travelled per insured person, and 2·7 miles travelled for each standard unit. The figures for B group work out at 3·4 miles per insured person and 3·9 miles for each standard unit, and for C group 1·6 miles per insured person and 9·7 miles per standard unit. At first sight the discrepancy between the miles travelled for a standard unit in different classes of practice seems very great. The fact that the

first two miles travelled are included in the total distances travelled, but do not count in claims, may have a special effect on doctors in group C who travel constantly within an area of two miles, though able to claim mileage only when they go beyond this range. In this way their total mileage per unit mounts up. These figures are to be considered further by the distribution committee with the object of discovering whether the distribution as carried out at present is equitable in the various classes of practice.

The comparable figures for 1928 show quite clearly the increase in work being done nowadays. Although the number of doctors keeping records was not so high (291 in 1928 against 430 in 1932), the figures are as follows:—

	Group.	1928.	1932.		Group.	1928.	1932.
Miles travelled per insured person.	A ..	4·3	5·4	Miles travelled per standard unit.	A ..	2·2	2·7
	B ..	2·6	3·4		B ..	3·4	3·9
	C ..	1·4	1·6		C ..	8·3	9·7

Possibly one reason for increased mileage is the increased number of references to the regional medical officer. In the country this often involves a visit from doctor to patient, whereas in town a patient may call to see the doctor.

These figures show the wisdom of keeping records accurately. Part of the capitation fee is paid definitely for the purpose of having records kept, and those doctors who fail to carry out this obligation are doing disservice to their fellow practitioners, for regional medical officers who examine their records are led to believe that they are doing less work than they are really doing, and consequently the payment they receive per attendance appears higher than it actually is. Thus a difficult position is created for negotiators who advance the argument that the remuneration offered is too low, having regard to the amount of work and standard of skill required to carry out obligations under the Act in these times.

R.S.V.P.

One of the points brought out in the Onslow report was the need for some standard form which a medical man could use when sending a patient to a hospital out-patient department for advice and/or treatment. It had been openly stated that insurance practitioners were in the habit of unloading troublesome cases on hospital consultants, with the result that hospitals were doing work which insurance practitioners ought to do themselves. There was not much, if any, evidence of this placed before the committee, and the representatives of the London Panel Committee and of the London Public Medical Service made it clear that such a shifting of responsibility was not at all what they wanted; their complaint was that a case sent to hospital for an opinion only was apt to be treated and kept on the out-patient list until cured. The reason for this, they thought, was that it was the line of least resistance for the consultant; it saved him writing letters, and he felt certain the patient was obtaining the treatment ordered. Also it swelled the out-patient attendances, which was a good advertisement for the hospital and thus helped to get subscriptions. Such methods, they felt, showed a lack of that spirit of coöperation which should exist between hospitals and general practitioners in the neighbourhood. To make the position clear, these delegates advised the preparation of a leaflet, to be used by practitioners sending cases to hospital, containing a statement that the doctor wanted the case back. This leaflet was to be drafted by the hospitals committee of the British Medical Association and then submitted for approval to the various interests concerned: King Edward's Hospital Fund committee, hospital committees, consultants, and panel committees. The B.M.A. model form was eventually considered by the general purposes sub-committee for London and, although its cost was thought to be somewhat high and the arrangement not very satisfactory, yet they advised the panel committee to accept it. It was, however, rejected, largely as a result of the omission from the leaflet of any indication that the practitioner did not want a patient to be treated at hospital if he could properly be treated at home. The panel committee then decided to draft a form in which this position was safeguarded by the additional words:

"As I wish to continue the treatment of this patient, I shall be glad if you will refer him/her back to me unless you consider either in-patient treatment or special out-patient treatment is necessary."

When this draft was submitted an amendment was moved and carried to delete the words "as I wish to continue the treatment of this patient," as it would not be right to say that about a case (say) of carcinoma of the pylorus, and as the rest of the sentence made it plain that the doctor did want the case back if suitable for return.

The panel committee form will be printed for economy on one side of the paper only, not on alternate sides as in the B.M.A. form. It seems a pity that the two bodies could not agree on a single form. There is, of course, no obligation on any doctor to use either of these forms. There is also nothing in this courtesy arrangement to prevent a hospital consultant from seeing a patient if he thinks fit without an introductory note from the attending practitioner. In both forms there is a note on the reply page which runs: The information on this form is strictly confidential and for your own use only.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. V. G. Horan to be Surg. Lt.-Comdr.

The following appointments are notified: Surg. Lt.-Comdr. D. H. Kernohan to *Vivid*, for Plymouth Hospital. Surg. Lt. H. L. Belcher to *Pembroke*, for Chatham Barracks.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Sub-Lt. G. S. Thoms to be Surg. Lt.

Surg. Lt. J. E. Davenport to *Victory*, for Haslar Hospital.

ROYAL ARMY MEDICAL CORPS

The undermentioned Lts. (on prob.) are confirmed in their rank: T. M. R. Ahern, R. Johnston, A. P. Trimble, J. B. Macfarlane, T. J. Moloney, J. L. Martin, H. K. G. Nash, A. D. Bourne, G. W. Crimmin, and G. W. Kendrick.

The undermentioned to be Lts. (on prob.): F. King and H. Clain.

ROYAL ARMY RESERVE OF OFFICERS

Col. G. A. Troup, ret. T.A., vacates the appt. of Hon. Col., R.A.M.C., Units, 54th (E. Anglian) Div., on completion of tenure and is succeeded by Col. W. D. Watson, ret. T.A.

TERRITORIAL ARMY

Col. A. J. Brown retires on completion of tenure of appt. as A.D.M.S., 52nd (Lowland) Div., and retains his rank, with permission to wear the prescribed uniform.

Lt.-Col. and Bt. Col. A. P. Watson, from Gen. List, R.A.M.C., T.A., to be Col., and is apptd. A.D.M.S., 52nd (Lowland) Div.

Maj. J. E. Rea, R.A.M.C., to be Divl. Adjt., 43rd (Wessex) Div., vice Maj. G. G. Drummond, R.A.M.C., vacated.

John Burns to be Lt.

INDIAN MEDICAL SERVICE

W. S. Morgan to be Lt. (on prob.).

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Exchequer Grants to Local Authorities

IN the House of Commons on Feb. 21st the following resolution was considered in Committee, Sir D. HERBERT, Chairman of Committees, in the chair:

That in respect of each year in the second fixed grant period: (*a*) the amounts to be included in the General Exchequer Contribution for England under Para. (c) of Subsection (3) of Section 86 of the Local Government Act, 1929, and in the General Exchequer Contribution for Scotland under Para. (c) of Subsection (3) of Section 53 of the Local Government (Scotland) Act, 1929, shall be respectively the sum of £5,350,000 and the sum of £850,000; and (*b*) the amounts to be paid under Para. (b) of Subsection (1) of Section 87 of the Local Government Act, 1929, and under Para. (B) of Subsection (1) of Section 54 of the Local Government (Scotland) Act, 1929, respectively, out of the Road Fund towards the contributions aforesaid shall be the same as were payable in respect of each year in the first fixed grant period.

Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health), in moving the resolution, said that its object was to enable a Bill to be introduced to fix the Local Government (General Exchequer Contributions) under the Local Government Act for the second grant period of four years. The new money to be provided under Section 86 of the Local Government Act, 1929, was fixed at £5,350,000 for England and Wales, and under Section 53 of the Local Government (Scotland) Act at £850,000 in respect of Scotland. The second point was to determine the variable element in the annual contribution from the Road Fund towards the General Exchequer Contribution, and in the resolution that amount for the second grant period was to be the same as it was for the first grant period—namely, £3,000,000. The Local Government Act, 1929, introduced very far-reaching and, indeed, revolutionary changes in the whole structure of local government. It recast the financial relationship between the exchequer and the local authorities. It deprived local authorities of a large amount of revenue through its derating provisions to the extent of £22,250,000. It changed the basis of grants; it stopped the percentage grants in respect of certain services, the assigned revenues and the grants under the Agricultural Rates Acts; it discontinued a total amount of grants of £16,250,000, and it provided new money fixed at £5,000,000. The loss of rates, loss of grants, and new money made up the General Exchequer Contribution which was a consolidated block grant paid annually. That grant was fixed for the first grant period of three years, which would terminate on March 31st, 1933. The second grant period would last for four years, and thereafter each grant period would be for five years. The second grant period would commence on April 1st next. As against those who contended that the Exchequer Contributions proposed for the second grant period were too high in view of the present financial position of the country, and those, on the other hand, who contended that they were too low, he claimed that the Government were entitled to argue that in adhering to the minimum proportion laid down in the Local Government Act justice was done. The Local Government Act was a network of compromise and concession. One of the main safeguards that the local authorities sought was to the effect that there should always be this equilibrium between the General Exchequer Contribution at the start of a grant period, and the rate-borne and grant-borne expenditure of the penultimate year of the previous period. After the lapse of 17 years the whole of the General Exchequer Contribution was to be paid out according to a famous formula, which was roughly determined by weighting population for given factors where the need most lay. For the first grant period only £15,000,000 of the £43,500,000 comprising the General Exchequer Contribution was allocated according to the formula; for the second grant period an identical amount of £15,000,000 would be so allocated; but thereafter more and more would be allocated according to the need and less and less according to the loss of rates and grants, until at the end of the 17-year period the whole of the vast consolidated block grant would be given according to need.

The reforms embodied in the Local Act had not yet been carried out. There was a sort of reconditioning going on the whole time within the counties to prevent overlapping of services and to promote efficiency, and if almost at the start of the 17-year period, when the Government were undertaking to help local authorities to reorganise their areas and services, they were to break faith with them, and at the end of three years reduced the General Exchequer Contribution below the minimum proportion laid down in the Act, it was easy to see that the achievement of the ultimate object might be jeopardised. At all events, one could at least say that the whole structure of the Local Government Act might well be strained. About 8 per cent. of the £15,000,000 in the first period went in respect of the unemployment factor. In the second period 20 per cent. of that sum would go to those areas where unemployment was more severe than it was before. Therefore, if they reduced the amount of new money it was obvious that a relatively more severe reduction would take place in those areas whose financial circumstances were strained in consequence of unemployment, while more prosperous areas with little or no unemployment, and where there had been no change of population would receive very little reduction in their allocation of the new money. For those two reasons the Government had decided to adhere to the minimum proportion. The Minister of Health had promised some months ago that he would inquire into the operation of the formula to see whether the various factors were operating wisely. That inquiry was still proceeding and anything done under the present resolution, and the Bill which was based upon it, was without prejudice to any recommendation made or adopted as a result of that inquiry.

Mr. GREENWOOD said that the services in respect of which percentage grants were discontinued under the Local Government Act were maternity and child welfare, with minor exceptions; the treatment of venereal disease, the treatment of tuberculosis, and the treatment of mental defectives. These were fundamental social problems. They all knew that there was hardly a town in the country where maternity and child welfare services were as highly developed as in the national interests they ought to be. That certainly applied to the treatment of tuberculous people. As long as there was unnecessary luxury these vital services which went to men-making and women-making in this country ought not to be crippled as they were being crippled to-day. The indictment of the Opposition against the Government in respect of this resolution was because of its meanness. They had penalised, for 16 months, the local authorities; they had held a bludgeon over those authorities for 18 months and there was another bludgeon still over their heads in the shape of the Ray Report. The Government were bludgeoning the local authorities at a time when, whatever might be said about certain national services, local government services ought to be pressed forward because of their enormous permanent value to the nation during the coming hard years.

Mr. HERBERT WILLIAMS said he thought that local government was grossly extravagant at the present time. The country was so over-taxed that unless the burden was reduced they would not be able to restore large numbers of people to employment. In pre-war days in Great Britain the cost of local

government borne on rates and grants was roughly £105,000,000, and in the year March 31st last it was £319,000,000. The cost had been growing in recent years. In 1922–23 it was just under £261,000,000. In 1928–29 it had grown to £294,000,000, and last year it reached £319,000,000. If they applied the change in the value of money as well as the increase in the cost of local government, local authorities were spending to-day on real values 75 per cent. more than ten years ago. This growth of local expenditure was intolerable, and unless it was checked it would lead to disaster.

Viscountess ASTOR strongly urged on the Minister of Health the necessity of watching the health of children, especially up to 5 years of age.

After further debate,

The resolution was agreed to.

On Thursday, Feb. 23rd, the resolution was agreed to on Report. The Bill was then brought in and read a first time.

Broadcasting

Mr. EMMOTT moved the following motion:

That this House, being satisfied that the British Broadcasting Corporation maintains in general a high standard of service, is of opinion that it would be contrary to the public interest to subject the Corporation to any control by Government or by Parliament other than the control already provided for in the charter and the licence of the Corporation; that controversial matter is rightly not excluded from broadcast programmes, but that the governors should ensure the effective expression of all important opinion relating thereto; and that only by the exercise of the greatest care in the selection of speakers and subjects can the function of the Corporation be fulfilled and the high quality of the British broadcasting service be maintained.

Sir S. CRIPPS moved as an amendment:

To leave out from "That," to end, and add "in view of the growing importance of broadcasting in the life of the community, particularly its actual and potential influence in the realm of political controversy, it is expedient that a Select Committee be appointed to review the work of recent years and make recommendations.

After further debate,

Sir KINGSLEY WOOD (Postmaster-General) said that the British Broadcasting Corporation was held in high respect throughout the world. It had and could have no other motive or object than that of public service. It had taken its responsibilities seriously, and was it not the least that Parliament could do to encourage and support it in its purpose and work.

Sir E. GRAHAM-LITTLE said that the whole trend of the debate had been towards the political aspect of broadcasting. He wished to introduce the educational aspect. An examination of the current Year Book of the British Broadcasting Corporation showed, under the heading "Events of the Year," that for ten months during which some 300 or 400 events were mentioned, only four of those could in any sense be described as promoting education in a wide and liberal sense. He would plead for a wider use of educational opportunities. The disregard of educational opportunities was particularly absurd in London, because in the administrative County of London there were 50 or more colleges of university rank contributing fresh knowledge and competing with each other in putting forward that knowledge. He did not think that the B.B.C. need have any fear that what were called "high brow" discourses would not be acceptable. University members, he thought, might point with pride to the growth of the number of students in the universities of the country, which demonstrated the fact that there was a large and increasing audience for serious material.

The amendment was negatived by 203 votes to 27. Mr. EMMOTT'S motion was then agreed to.

Home and Empire Settlement

In the House of Commons on Friday, Feb. 24th, Mrs. WARD moved the second reading of the Home and Empire Settlement Bill, a measure to amend the Empire Settlement Act, 1922. She said that the object of the Bill was to give greater power and facilities to the Secretary of State for the Dominions to coöperate in schemes of land settlement in the United Kingdom and the Dominion overseas. The Bill set up a board of five persons whose sole job it would be to promote the development of the natural resources of the Dominions and the United Kingdom.

Mr. THOMAS (Secretary of State for Dominion Affairs) said that while this was not a time when they could hope that any large number of people could be sent overseas, he believed that ultimately prosperity would be restored to the Dominions and then the opportunity for migration would come. In the interval he agreed that they ought to get ready. The Government therefore supported the second reading of this Bill, and hoped that as a result of discussions in Committee practical suggestions would emerge of which the Government would be ready to take advantage.

After further debate,

Sir FRANCIS FREMANTLE said that the population question was changing the alignment of the world. While the increase in the populations of the West was drawing to its close the populations of Asia were increasing. That fact was never taken seriously enough by our thinkers, who light-heartedly referred to the advantages of the declining birth-rate. The vital statistics had filled him with serious anxiety in the last 30 years. If they could keep the position stable it would be a different question, but they could not. They had seen the birth-rate decline from 35 to about 15 per 1000, and it was getting very near to the death-rate. The death-rate had declined from 24 to 12 per 1000, but it could not go much lower. In fact, as the population was becoming on an average more aged, so it was bound to go up. Before long the death-rate would be bound to go up to 20 per 1000, which meant an average life of every individual born of 50 years. This meant a shrinking of the population. They must see what Mr. Baldwin said in one of his notable speeches—the grim vision, the spectre that was lurking behind those facts. Australia with her shrinking birth-rate, and before long her increasing death-rate, would not be able to maintain with her population of 8,000,000 the whole of the continent in face of the enormous advance of the populations of Asia. A white Australia depended on the reinvigoration of the population from the populations of other parts of the Empire. The Empire could not carry on as it was unless the problem of Empire migration was settled. That was really the great case for this Bill.

The Bill was read a second time.

Pharmacy and Poisons Bill

In the House of Lords on Feb. 28th the Earl of LUCAN presented a Bill to amend the law relating to pharmacy and poisons.

The Bill was read a first time.

HOUSE OF COMMONS

WEDNESDAY, FEB. 22ND

Tuberculosis in Scotland

Mr. MCGOVERN asked the Secretary of State for Scotland the number of cases of tuberculosis in Scotland in the last 12 months.—Mr. SKELTON (Under Secretary of State for Scotland) replied: The final figures are not yet available but provisional returns show that the number of new cases of pulmonary tuberculosis notified in Scotland during the year 1932 was 5512 and that the corresponding number of non-pulmonary cases was 3888.

THURSDAY, FEB. 23RD

Medical Referee and Workmen's Compensation

Mr. TINKER asked the Minister of Labour if he was aware that persons whose compensation was suspended under the Workmen's Compensation Act pending the decision of the medical referee were not allowed to sign on at the labour exchange, and if the decision of the medical referee was

against them they were ruled out of unemployment benefit from the time of suspension until the decision of the medical referee; and if he would consider taking steps to meet this situation.—Sir HENRY BETTERTON replied: Such persons are not prevented from signing the register by any rule of the Department, but in order to claim benefit they would have to sign a declaration that they are capable of and available for work at a time when they are contending for the purposes of workmen's compensation that they are not capable of work. It has been decided by the Umpire that a person who is contending that he is not capable of work cannot be available for work and is therefore not qualified for benefit.

Mr. TINKER: Does not the Minister see the difficulty in which an applicant is placed. First of all he thinks he is not fit for work and then the medical referee declares him to be fit for work; that causes the difficulty. Will the right hon. gentleman when he brings in legislation consider this point.

Sir H. BETTERTON: Yes, I will consider it, but the hon. Member forgets that he is contending that a man is not capable of work because he is under a disability. If he makes that contention on the one hand it is almost impossible I should think to make the submission that he is fit for work.

Mr. TINKER: The medical referee says that he is.

The Death of Madame Vlora

Mr. COCKS asked the Home Secretary what action had been taken by Scotland Yard in response to the two applications from Avry Bey Delvina asking for information regarding the death of his sister Madame Vlora; and why that information had not been furnished.—Sir JOHN GILMOUR replied: As this death had been the subject of a coroner's inquest, Mr. Delvina was advised by the Commissioner of Police on the 18th instant that any application for official information concerning the circumstances of Madame Vlora's death should be addressed to the coroner, whose name and address were furnished to him.

Mentally and Physically Defective Children

Viscountess ASTOR asked the Parliamentary Secretary to the Board of Education the total number of children who entered school at 5 years of age last year; and what proportion of them were suffering from mental or physical defects.—Mr. HERWALD RAMSBOTHAM replied: I have no information which would enable me to give the precise figures asked for. Of all children who entered public elementary schools for the first time in 1931 (the last year for which information is available) 19·4 per cent. were found to require some form of medical treatment. The corresponding figures showing the proportion suffering from mental defects are not available. Such defects are frequently not diagnosed until a later stage.

Viscountess ASTOR: Is it not true that the chief medical officer in his report says that 27 per cent. of the juveniles in elementary schools are physically defective, and also that there are diseases that could be easily prevented, and that the best way to treat them is by open-air nursery schools? Does the Government think that this is a good time to establish open-air nursery schools?

No answer was given.

Discharges from Mental Hospitals

Mr. DAVID GREFELL asked the Minister of Health if he would issue a regulation with a view to acquainting the public with their rights under the Lunacy Act, 1890, that Section 79 should be posted up in all waiting-rooms where friends came to visit the inmates of mental institutions in order that the patient's friends, as distinct from his relatives, might know that it was in their power to apply to the visiting committee for the patient's discharge to their care.—Sir E. HILTON YOUNG replied: There are objections to a regulation of the kind suggested. I am advised that the situation is adequately met by the existing rule which requires the managers of every institution, on the admission of every rate-aided person, to send a notice, embodying the substance of Section 79 of the Lunacy Act, to all persons whose names appear as relatives or friends of the patient on the statement of particulars accompanying the reception order.

Milk Adulteration

Brigadier-General CLIFTON BROWN asked the Minister of Health whether his attention had been called to the comments in the Report of the Milk Reorganisation Committee on the unfairness of the Food and Drugs Adulteration Act, 1928, to the milk producer; and whether he would now consider legislation to amend that Act by distinguishing between the wilful adulterator and persons who acted in complete good faith.—Sir E. HILTON YOUNG replied: I am aware of the comments referred to. This matter will be considered in conjunction with my right hon. friend, the Minister of Agriculture, in the light of the recommendations of the Commission as a whole.

Influenza

Major DESPENCER-ROBERTSON asked the Minister of Health whether, in view of the number of deaths from annual influenza epidemics, which in the first few weeks of this year amounted to over 10,000, and of the dislocation of public services and of industry arising from the widespread character of the epidemics, he would consider making influenza a notifiable disease.—Sir E. HILTON YOUNG replied: I fully appreciate the gravity of the effects of influenza, and the question of making it a notifiable disease has been frequently considered. I am advised, however, that this course would not be likely to reduce either the morbidity and mortality from influenza or the dislocation of public services and of industry to which my hon. and gallant friend refers. The many clinical forms which influenza takes, and the many uncertainties of its diagnosis would in any event make it difficult to draw satisfactory conclusions from notification figures. My hon. and gallant friend is no doubt aware that acute influenzal pneumonia is already a notifiable disease.

MONDAY, FEB. 27TH

All-India Medical Council

Mr. PARKINSON asked the Secretary of State for India whether the Government of India would consider the advisability of delaying the introduction of the All-India Medical Council Bill until such time as the federal legislature had been constituted.—Sir S. HOARE replied: The Bill has already been introduced.

Medical Examinations and Pensions Claims

Mr. HARCOURT JOHNSTONE asked the Minister of Pensions whether it was the practice to make fresh medical examinations, on behalf of his department, of men whose claims to disability pensions had been finally disallowed in cases where fresh evidence had been brought forward by independent medical men.—Major TRYON replied: Where fresh evidence of fact is produced which indicates that the decision was given on an incomplete knowledge of the material facts, such action is taken as may be required, including further medical examination, if this is found to be necessary to determine the specific point at issue—namely, the origin of the condition complained of.

Local Authorities Expenditure

Mr. HERBERT WILLIAMS asked the Minister of Health on what basis it had been estimated that the total local expenditure from all sources would show a reduction of as much as £20,000,000, as compared with the figure for the year 1929–30.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied: The estimate to which my hon. friend refers was that total local expenditure showed a reduction of £20,000,000 over the figure for the year 1929–30. This figure was, as my right hon. friend was advised, the approximate reduction in local expenditure on the figure of 1929–30 which the Ray Committee estimated would be secured as a result of the economy measures taken in the autumn of 1931.

TUESDAY, FEB. 28TH

The Panel Committee in Glasgow

Mr. MCGOVERN asked the Secretary of State for Scotland the reason for allowing doctors who had no panel practice to serve on the national health insurance panel committee of the burgh of Glasgow; and were they required to pay subscriptions similar to the panel doctors.—Mr. SKELTON (Under Secretary for Scotland), replied: The arrangements for the appointment of panel committees in Scotland are laid down in regulations of which I am sending the hon. Member a copy. These regulations provide that only medical practitioners who are under agreement to treat insured persons shall be entitled to take part in the election of members of panel committees, that all the members shall be duly qualified medical practitioners, and that not less than two-thirds of the members shall be practitioners under agreement to treat insured persons. I have no reason to think that the provision whereby these committees may include a certain proportion of non-panel practitioners is other than a desirable one. The arrangement under which the administration expenses of the panel committee for the burgh of Glasgow are defrayed by means of a system of voluntary subscriptions by practitioners is a private one with which I have no concern.

Mr. MCGOVERN asked the Secretary of State for Scotland the reason for the increase of the national health insurance panel committee of the burgh of Glasgow from 30 to 51, in view of the provisions of the National Health Insurance Panel Committee Regulation.—Sir GODFREY COLLINS replied: I am sending the hon. Member a copy of amending Regulations made by the Department of Health for Scotland on April 21st last which, as he will observe, provide that the

panel committee for the burgh of Glasgow should consist of 56 persons instead of the former number of 30. The increase was authorised to provide, among other things, for the fuller representation of medical practitioners in the city, whose numbers have very considerably increased since the original regulations were made.

Pit-head Baths

Mr. PARKINSON asked the Secretary for Mines the number of mines in England and Wales that had pit-head baths; and what further action was being taken to increase the facilities for washing and cleaning at the pit-heads.—Mr. E. BROWN replied: 98 mines in England and Wales (besides 28 in Scotland) have pit-head baths in use, and bath installations are in course of erection under the Mining Industry Act, 1926, at 35 other mines in England and Wales and 10 in Scotland. These numbers exclude baths for mine officials only. According to present plans, from 30 to 35 additional mines will be provided with baths annually under the Mining Industry Act, 1926.

Use of Skimmed Milk in Chocolate Manufacture

Sir PATRICK FORD asked the President of the Board of Trade whether he was aware that the importation of skimmed milk into this country on advantageous terms as compared with full cream condensed milk or milk powders was discouraging the manufacture of milk chocolate of a high nutritive value in favour of milk chocolate of a low nutritive value; and if he would consider a marking order to distinguish the two kinds of milk chocolate or some other method of encouraging the manufacture and sale in this country of the more nutritive variety.—Mr. RUNCIMAN replied: There is no power under the Merchandise Marks Act to make an order of the kind suggested. Questions of quality in relation to foodstuffs are more within the province of the Minister of Health.

Men Rejected for the Defence Services

Mr. LUNN asked the Financial Secretary to the War Office how many men who offered themselves for the Army during 1931 and 1932 were rejected on medical or other grounds.—Mr. DUFF COOPER replied: The figures for the recruiting year 1930–31 were 82,682 men served with notice papers and 46,818 rejected. The corresponding figures for 1931–32 were 70,418 and 41,667. The hon. Member will find these and other figures relating to recruiting in the General Annual Report on the British Army which will be in the possession of members in a few days.

Mr. T. WILLIAMS asked if the hon. gentleman attributed this large volume of rejections to a higher standard of military requirements, or was their rejection due to the continuous deterioration in the physique of the manhood of the country.

Mr. DUFF COOPER: No, I do not think that any such conclusion could be drawn from these figures. The standard does go up and down in different districts in proportion to the number of recruits that have been obtained.

Mr. LUNN asked the First Lord of the Admiralty how many men who offered themselves for the Navy during 1931 and 1932 were rejected on medical and other grounds.—Lord STANLEY (Parliamentary Secretary to the Admiralty) replied: As the Admiralty require only about one-fourteenth of the total number who offer themselves for the Royal Navy and Royal Marines, only the very best men are taken. In the financial year 1930–31, 43,453 men offered themselves. Of these 38,028 were rejected by recruiters for miscellaneous causes (including obvious physical defects) and 2451 on examination by medical officers. The comparable figures for 1931–32 are 47,054, 41,063, and 2781.

Mr. LUNN asked the Under Secretary of State for Air how many men who offered themselves for the Air Force during 1931 and 1932 were rejected on medical or other grounds.—Sir VICTOR WARRENDER (Vice-Chamberlain of the Household) replied: The figures for men recruits for the calendar year 1931 were as follows: application forms completed, 11,321; applications taken up, 5914, of which 3768 were rejected. The corresponding figures for 1932 were 8265, 2042, and 1255. It should be added that the requirements in 1932 were much below those of 1931.

Mr. LUNN asked if the answers to all these questions did not show that they were getting towards a C3 population. (Cries of "No.")

No answer was given to this question.

QUEEN'S INSTITUTE OF DISTRICT NURSING.—At the annual meeting of the council last week it was reported that since December last 22 associations had been affiliated, and that notwithstanding adverse industrial conditions 12 new ones were formed last year in Durham and Lancashire. Steps are being taken for the organisation of a county nursing association for Middlesex.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, March 7th.—8.30 P.M., PATHOLOGY. Laboratory Meeting at the National Institute for Medical Research, Hampstead, N.W. Short Communications; Mr. W. J. Elford and Dr. C. H. Andrewes: Observation on the Neutralisation of Phages by Antisera. Miss W. I. Strangeways: *Streptobacillus moniliformis* Infection of Mice. Dr. C. H. Andrewes: Antigenic Specificity of Fowl-tumour Viruses. Demonstrations: Dr. W. E. Barnard: The Virus of Canary Pox. Dr. F. M. Burnet: Inclusion Bodies in Canary Pox. Dr. A. Clark: Effects of a Sapotoxin Isolated from *Xanthosoma atrovirens* on the Kidney of the Rat. Sir Henry Dale (for Dr. E. Schuster): Apparatus for Continuous Slow Infusion. Mr. P. Hartley: Demonstration of Biological Standards. Prof. E. Hindle and Dr. P. Bruce White: Precipitin Reactions with Specific Substances from Spirochætes. Dr. W. E. White, Dr. M. K. McPhail, Dr. M. Hill, and Dr. A. S. Parkes: Methods of Performing Hypophysectomy in Animals. 8.30 P.M., ORTHOPÆDICS AND SURGERY. Discussion: Acute Suppurative Arthritis of the Knee-joint. Openers: Mr. V. H. Ellis and Mr. R. W. Butler Orthopædics, and Mr. P. H. Mitchiner Surgery.

WEDNESDAY.—5 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Clinico-pathological Meeting. Specimens Mr. Cecil A. Joll: 1. Carcinoma of Colon from a Gir aged 17. 2. Inflamed Diverticulum of the Cæcum Simulating Acute Appendicitis.

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Dr. Hugh S. Stannus: Addison's Disease. 5 P.M., OPHTHALMOLOGY. Clinical Meeting at St. Bartholomew's Hospital, E.C. Demonstration: Mr. J. W. Tudor Thomas: A Projection Protractor for Use with a Bjerrum Screen. Cases and Specimens: Mr. Humphrey Neame: 1. Familial Macular Disease in Twins aged 11 Years. 2. Cysts of the Retina with Cholesterin Crystals in or behind the Retina. Mr. H. B. Stallard: Specimens of Metastatic Carcinoma in the Choroid.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, March 6th.—9 P.M., Mr. V. Zachary Cope: Pathology of Acute Abdominal Disease. (Last Lettsomian lecture.)

HARVEIAN SOCIETY OF LONDON.

THURSDAY, March 9th.—8.30 P.M. (at Paddington Town Hall), Prof. William Wright: a Pre-Harveian Lecture on the Anatomy and Physiology of the Central Nervous System. (Harveian lecture.)

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, March 10th.—8.45 P.M. (Miller General Hospital, Greenwich), Dr. W. S. C. Copeman: Spa Treatment and Medical Hydrology.

SOUTH-WEST LONDON MEDICAL SOCIETY, Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common, S.W.

WEDNESDAY, March 8th.—9 P.M., Clinical Meeting.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, W.

THURSDAY, March 9th.—8.30 P.M., Mr. W. McAdam Eccles: Psychological Surroundings of the Surgical Patient.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

WEDNESDAY, March 8th.—8 P.M., Mr. J. L. Musgrave: Recent Developments in the Warming and Ventilation of Buildings.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, March 7th, and following THURSDAY.—5 P.M., Dr. Charles Newman: The Physiology of the Gall-bladder and its Functional Abnormalities. (Goulstonian lectures.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 6th, to SATURDAY, March 11th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Practical Problems in Medicine and Surgery. Lecture by Mr. C. Price Thomas on Empyema at 4 P.M. on Tues. (Free to Members and Associates of the Fellowship of Medicine.)—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Evening M.R.C.P. Course. Mon. and Fri., at 8 P.M.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E.1. Post-graduate Course in Medicine, Surgery, and Gynæcology. All day.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W. Post-graduate Course in Orthopædics. All day.—BRITISH RED CROSS CLINIC FOR RHEUMATISM, Peto-place, N.W. Evening Course in Rheumatism. Tues. and Thurs. at 8.30 P.M. (Courses, &c., open only to Members and Associates of the Fellowship.)

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, March 6th.—10 A.M., Medical Wards, Skin Clinic. 11 A.M., Surgical Wards. 2 P.M., Surgical Wards, Gynæcological and Eye Clinics. 4.15 P.M., Lecture: Dr. R. Ironside: Anæsthetics.

TUESDAY.—10 A.M., Medical Wards. 11 A.M., Surgical Demonstration. 2 P.M., Throat Clinic. 4.15 P.M., Lecture: Mr. Hamblen Thomas: Deafness.

WEDNESDAY.—10 A.M., Medical Wards, Children's Clinic. 2 P.M., Eye Clinic. 4.45 P.M., Venereal Diseases.

THURSDAY.—10 A.M., Neurological Clinic. 11.30 A.M., Fracture Demonstration. 2 P.M., Eye and Genito-urinary Clinics. 4 P.M., Lecture: Dr. Burnford: Febrile States.
FRIDAY.—10 A.M., Skin Clinic. 12 noon, Lecture on Treatment. 2 P.M., Throat Clinic. 4.30 P.M., Lecture: Dr. Burnford: Febrile States.
SATURDAY.—10 A.M., Medical Wards, Children's Clinic. Surgical Wards. The lectures at 4.15 P.M. are open to all Medical Practitioners without fee.
Daily.—2 P.M., Operations, Medical and Surgical Out-patients.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, March 7th.—5 P.M., Dr. H. T. Barron: Common Eruptions in Childhood. (Chesterfield lecture.)
THURSDAY.—5 P.M., Dr. W. N. Goldsmith: Benign Growths of the Skin. (Chesterfield lecture.)

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, March 6th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Vascular Diseases of the Nervous System.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Demyelinating Diseases of the Nervous System.
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Clinical Demonstration.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Cerebral Tumours.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Virus Diseases of the Nervous System.

ST. MARK'S HOSPITAL, City-road, E.C.
THURSDAY, March 9th.—4 P.M., Mr. J. P. Lockhart-Mummery: Fistula in Ano.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, March 10th.—4 P.M., Mr. J. D. McLaggan.

ST. PETER'S HOSPITAL FOR STONE, Henrietta-street, W.C.
WEDNESDAY, March 8th.—3 P.M., Dr. John Roth: Radiological Investigation of Urinary Disease.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, March 8th.—4 P.M., Mr. W. E. Tucker: Manipulative Surgery.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION, 11, Chandos-street, W.
FRIDAY, March 10th.—5 P.M., Dr. J. A. H. Brincker: Presidential address.

NATIONAL COUNCIL FOR MENTAL HYGIENE.
WEDNESDAY, March 8th.—5.30 P.M. (11, Chandos-street, Cavendish-square, W.), Dr. E. A. Bennet: Confidence.

ROYAL NORTHERN GROUP OF HOSPITALS.
WEDNESDAY, March 8th.—3.15 P.M. (at the Royal Chest Hospital, City-road), Dr. F. E. Saxby Willis: Cancer of the Lung.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, March 9th.—9 P.M., Mr. V. E. Negus: Diagnosis and Treatment of Pharyngitis.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, March 7th.—4.15 P.M., Dr. W. Brockbank: Pleural Effusion.
FRIDAY.—4.15 P.M., Mr. H. H. Rayner: Demonstration of Surgical Cases.

ST. MARY'S HOSPITALS, Manchester.
FRIDAY, March 10th.—4.15 P.M. (at the Whitworth-street West Hospital), Post-graduate Lecture. Dr. Bramwell: The Cardiac Complications of Pregnancy.

ANCOATS HOSPITAL, Manchester.
THURSDAY, March 9th.—4.15 P.M., Dr. N. Kletz: Colitis and Affections of the Colon.

GLASGOW POST-GRADUATE LECTURES.
WEDNESDAY, March 8th.—4.15 P.M. (at the Western Infirmary), Dr. J. G. Macgregor-Robertson: Venereal Diseases (Male).

Appointments

FOSTER, J., M.B. Camb., F.R.C.S. Eng., has been appointed Ophthalmic Surgeon, Leeds General Infirmary.
PAGE, C. MAX, M.S. Lond., F.R.C.S. Eng., Consulting Surgeon to the Royal Hospital and Home for Incurables, Putney.
Certifying Surgeons under the Factory and Workshop Acts: BURNIE, R. McC., M.B., Ch.B. Edin. (Mochrum, Wigtown); COGAN, L. D. B., L.R.C.S. Edin., L.S.A., L.M.S.S.A. (Northampton); and SHERWOOD, C. H., M.B., Ch.B. Birm. (Willenhall, Stafford).

Vacancies

For further information refer to the advertisement columns

Aberdeen University.—Lecturer in Medicine. £400.
Aylesbury, Buckinghamshire County Council.—Asst. County M.O.H. and M.O.H. £800.
Barnstaple, North Devon Infirmary.—Res. M.O. At rate of £150.
Bolingbroke Hospital, Wandsworth Common, S.W.—Hon. Surgeon to Ear, Nose and Throat Dept. Also Part-time Pathologist.
Bootle General Hospital.—Cas. O. At rate of £150.
Bradford Municipal General Hospital, St. Luke's.—H.P.'s and H.S.'s. Each at rate of £150.
Brighton Sanatorium and Infectious Disease Hospital.—Jun. Res. M.O. At rate of £150.
Chelmsford and Essex Hospital.—Two Res. M.O.'s Each £150.
Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Great Barrow.—H.P. At rate of £100.
Durham County Hospital.—H.S. £150.
East Ham Memorial Hospital, Shrewsbury-road, E.—H.P. At rate of £150. Also H.S. and Cas. O. At rate of £120.
Golden-square Throat, Nose and Ear Hospital, W.—Hon. Anæsthetist.
Greenwich, Dreadnought Hospital.—H.P. and H.S. Each at rate of £110.
Grimsby and District Hospital.—H.S. £200.
Guernsey States Mental Institutions.—Mental Officer. £800–£1000.
Hampstead General and N.W. London Hospital, Haverstock-hill, N.W.—Cas. Surg. O. for Out-patient Dept., Bayham-street. At rate of £100.
Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—H.P. At rate of £120.
Leicester Royal Infirmary.—Two Cas. H.S.'s. Each £125.
Liverpool, Alder Hey Children's Hospital.—Res. Asst. M.O. £200.
Liverpool, Mill-road Infirmary.—Med. Supt. £1000.
Liverpool Stanley Hospital.—Two H.S.'s. Each at rate of £100.
L.C.C.—Temporary District M.O.'s. £140–£200. Pathologist at Group Laboratory, Mile End Hospital. £1100. Also Asst. Pathologist to Group Laboratories. Each £650.
London Lock Hospital, 283, Harrow-road, W.—Res. M.O. At rate of £175. Also Surg. Reg. £100.
Manchester, Ancoats Hospital.—Res. Surg. O. £200. Also Orthopædic H.S. At rate of £100.
Manchester Ear Hospital, Grosvenor-square.—Res. H.S. £120.
Manchester Royal Children's Hospital, Gartside-street.—Two Asst. M.O.'s for Out-patients' Dept. Each at rate of £150.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Manchester, St. Mary's Hospitals.—Res. Surg. O. for High-street Hospital. £175. Also Two H.S.'s for Whitworth-street West Hospital. Each at rate of £50.
Manchester, Victoria Memorial Jewish Hospital.—Res. Surg. O. £200. Also Jun. H.S. and Res. M.O. Each at rate of £125.
Miller General Hospital, Greenwich-road, S.E.—Res. Surg. O. and Reg. £250. Also H.P. £100.
National Temperance Hospital, Hampstead-road, N.W.—Hon. Asst. Physician.
Newcastle-upon-Tyne, City Hospital for Infectious Diseases.—Res. Med. Asst. £350.
Newcastle-upon-Tyne, Hospital for Sick Children.—H.P. Also Sen. and Jun. H.S. Each at rate of £100.
Northampton General Hospital.—H.P. and H.S. Also H.S. to Ear, Nose and Throat Dept. Each at rate of £150.
Northwood, Mount Vernon Hospital.—Res. M.O. £250. Also Asst. for Radio Therapeutic Dept.
Nottingham General Hospital.—H.P. At rate of £150.
Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W.—Res. M.O. At rate of £100.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington, W.—H.S. At rate of £75.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W. Asst. to Pædiatrician and M.O. to Infant Consultation Centre. 1½ gns. per Clinic.
Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas. O. Each at rate of £100.
Radium Institute, Ridinghouse-street, W.—Res. Surg. Reg. At rate of £250.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—H.S. At rate of £150.
Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.
St. Leonards-on-Sea, Buchanan Hospital.—Sen. and Jun. H.S. At rate of £175 and £125 respectively.
St. Marylebone General Dispensary, 30, Marylebone-lane, N.W. Gynæcologist.
St. Paul's Hospital for Diseases of the Genito-Urinary Organs and Skin, Endell-street, Holborn, W.C.—H.S. At rate of £150.
St. Peter's Hospital for Stone, &c., Henrietta-street, W.C.—H.S. At rate of £75.
Salford Royal Hospital.—H.P. and H.S. Also Cas. H.S. Each at rate of £125.
South Africa, Central Hospital, Bloemfontein.—Radiologist. £900.
Stockport Infirmary.—Secretary-Superintendent. £500.
Swansea General and Eye Hospital.—H.P. At rate of £150.
Swindon and North Wilts Victoria Hospital.—Res. M.O. At rate of £125.
University College Hosp., Gower-street, W.C.—Asst. Obst. Surg.
Walsall Manor Hospital.—Asst. M.O. £350.
West Bromwich, Hallam Hospital.—Res. H.P. At rate of £200.
West London Hospital, Hammersmith-road, W.—H.P. Two H.S.'s to Spec. Depts. Also Res. Anæsthetist. Each at rate of £100.
Weston-super-Mare General Hospital.—Res. H.S. £150.
Wolverhampton Royal Hospital.—H.P. Also H.S. for Ear, Throat and Nose Dept. At rate of £125 and £100 respectively.
York County Hospital.—Res. Anæsthetist and Asst. H.S. £150.
The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Woolpit, Suffolk.

INDEX TO "THE LANCET." VOL. II., 1932

THE Index and Title-page to Vol. II., 1932, which was completed with the issue of Dec. 31st, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, London, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

MEDICAL NEWS

University of Cambridge

On Feb. 24th the following degrees were conferred:—

B.Chir.—G. A. W. Whitfield (by proxy) and S. F. L. Dahne.

University of London

At a meeting of the Senate on Feb. 22nd, Mr. J. B. S. Haldane, F.R.S., was appointed to a university chair of genetics tenable at University College.

Since 1922 Prof. Haldane has been reader in biochemistry in the University of Cambridge, and since 1927 he has been head of the genetical department of the John Innes Horticultural Institution. In 1930 he was elected Fullerian professor of physiology at the Royal Institution.

Prof. Cyril Burt, D.Sc., was appointed to deliver the Heath Clark lectures for 1933, and Prof. W. Blair Bell, F.R.C.S., was appointed representative of the university on the court of the University of Liverpool.

It is announced that the King intends to lay the foundation-stone of the new university buildings on June 26th.

The following have been appointed staff examiners in the subjects of examination for medical degrees for 1933:—

Anatomy: Prof. Edward Fawcett and Prof. Thomas Yeates. Bacteriology: Prof. C. H. Browning. Forensic Medicine and Hygiene: Dr. G. Roche Lynch, Prof. M. E. Delafield, and Dr. J. H. Ryffel. Medicine: Prof. F. S. Langmead, Dr. M. A. Cassidy, Dr. Anthony Feiling, Prof. W. E. Hume, and (associate examiners) Dr. Adolphe Abrahams, Dr. T. Izod Bennett, Dr. C. M. Hinds Howell, and Dr. E. Bellingham Smith. Mental Diseases and Psychology: Dr. Henry Yellowlees and Dr. Edward Mapother. Neurology: Dr. C. P. Symonds and Dr. F. M. R. Walshe. Obstetrics and Gynæcology: Dame Louise McIlroy, Mr. J. D. Barris, Mr. D. W. Roy, Prof. J. M. Munro Kerr, Prof. F. J. Browne, and (associate examiners) Mr. Stanley Dodd, Mr. William Gilliatt, Prof. John McGibbon, Mr. Frank Cook, and Mr. Leslie Williams. Oto-Rhino-Laryngology: Mr. W. M. Mollison and Mr. W. G. Howarth. Pathology: Prof. James McIntosh and another, and (associate examiners) Prof. J. S. Dunn and Dr. W. D. Newcomb. Pharmacology: Prof. W. J. Dilling and Dr. Eleanor Scarborough. Physiology: Prof. B. J. Collingwood and Dr. L. E. Shore. State Medicine and M.D. Hygiene: Prof. W. W. Jameson and Dr. Charles Porter. Surgery: Mr. N. C. Lake, Prof. E. D. Telford, Prof. C. C. Choyce, Mr. V. Zachary Cope, Mr. G. T. Mullally, and (associate examiners) Mr. R. Davies-Colley, Mr. J. Paterson Ross, Mr. P. H. Mitchiner, and Mr. H. C. Edwards. Tropical Medicine: Colonel W. P. MacArthur.

Royal Institution

Prof. Elliot Smith's course of afternoon lectures on the Evolution of the Mind, announced for March 16th, 23rd, 30th, and April 6th, and his Friday evening discourse on March 24th, have been postponed because of illness.

Post-graduate Work in Berlin

Medical visitors to Berlin are invited to apply to the Medizinische Informationsbüro at the Kaiserin-Friedrich Haus, Robert Koch-Platz 7, Berlin, N.W.7, which is ready to supply information about hospitals, clinics, public health, and continuation courses. The office is, it is stated, of a semi-public nature, and all information is furnished impartially and gratuitously.

Royal Medical Benevolent Fund

At the meeting held in January the committee voted 84 grants amounting to £2089. At the February meeting £693 was voted to 34 applicants.

The following are particulars of a few cases helped:—

M.B., aged 39. Married, two sons, aged 12 and 9. The applicant is suffering from disseminated sclerosis, and is totally incapacitated from following any occupation; he is unable to move one step without help. It was found that his total income was £123, with which he has to maintain himself, his wife, and two sons. Fund voted £40 in four instalments, and assistance is being obtained from other societies.

M.B., aged 69. Married, wife aged 62. Applicant is suffering from macular choroiditis in an advanced stage in both eyes, and four years ago had to sell his practice. Since then he has been living on his capital, which is now almost exhausted. Income for past 12 months was £101. Fund voted £40.

Widow, aged 41, of M.B. Husband contracted septic pneumonia, and died at the age of 36, leaving the widow with two children, girl aged 9 and boy aged 5. The boy has recently developed epilepsy. Total income £1 a week. Fund voted £26 in four instalments, and is obtaining help from other societies.

Widow, aged 46, of M.R.C.S. Husband died in December, 1932, at the age of 56. He was a retired Lieut.-Colonel in the R.A.M.C. The widow is left with an army pension of £90 and a children's allowance of £16 for each of the two youngest—making a total of £132. Fund voted £26 in four instalments.

Cheques should be made payable to the hon. treasurer of the fund, 11, Chandos-street, Cavendish-square, London, W.1.

Chicken-pox has been made notifiable in the City of London for 12 months commencing on March 18th.

British Institute of Philosophy

The Dean of St. Paul's will deliver an address on Religion, Science, and Philosophy at 8.15 P.M. on Tuesday, March 14th, at University College, Gower-street, London, W.C. Tickets may be had from the institute's director of studies, University Hall, 14, Gordon-square, W.C.1.

Course on Disorders of Digestion

A fortnight's course on the medical and hydrological treatment of digestive and nutritional disorders will begin on May 1st at the Hôpital Necker, Paris, under the direction of Prof. Maurice Villaret. There will be a study tour to Vichy from May 13th onwards. Particulars may be had from the laboratoire d'hydrologie of the Faculté de Médicine de Paris (École pratique).

Royal Sanitary Institute

On Friday, March 17th, at 4.30 P.M., a sessional meeting will be held, in conjunction with the Yorkshire branch of the Society of Medical Officers of Health, in the Winter Gardens, Royal Baths, Harrogate. Dr. J. A. Charles, medical officer of health for Newcastle-on-Tyne, will open a discussion on the Problem of Bacillary Dysentery, and Lieut.-Colonel J. A. Dixon, chief veterinary officer for Leeds, a discussion on Food Inspection from the administrative Aspect.

Tata Research Scholarships in Hæmatology

In supplement to the announcement made in our issue of Feb. 18th (p. 376) it is explained that the number of scholarships offered for research on diseases of the blood has now been increased to four, and that they are open to candidates from all nations, including India. Nominations in respect of Great Britain and the Dominions will be made to the trustees in Bombay by an advisory committee in London. Applications may be addressed to Dr. H. S. Patel, Capel House, 62, New Broad-street, London, E.C.2; Prof. A. Vacha, Calvinstrasse 27, Berlin, N.W.40; or directly to the trustees, c/o Messrs. Tata Sons, Ltd., Bombay House, Bruce-street, Fort, Bombay.

Glasgow Hospitals

In 1932 the ordinary expenditure of Glasgow Royal Infirmary exceeded the ordinary income by £26,000; the similar deficit of the Glasgow Western Infirmary was £14,900. The Royal Infirmary's in-patients were 16,313 and they stayed 17·3 days on the average. There were nearly 116,000 out-patients, whose attendances increased so considerably that the existing accommodation "will have to be replaced without delay by more commodious and modern premises." At the Western Infirmary and the David Elder Infirmary, which is administered as a unit of the main institution, there were last year 12,893 in-patients, and over 48,000 out-patients, also a large increase. The average residence was 17·83 days and the daily cost 7*s.* 5*d.*, a fractional reduction. The average cost per patient was £6 13*s.* The accommodation in the pathological department has been gradually becoming more and more taxed, and is now so deficient in various respects that extension will have to be considered at an early date.

Fellowship of Medicine and Post-Graduate Medical Association

A debate will take place on Thursday, March 9th, at 9 P.M. at the Medical Society of London (11, Chandos-street, Cavendish-square, W.) on the motion that Immediate Operation is indicated in every case of "Acute" Appendicitis. Lord Moynihan, president of the Fellowship, will occupy the chair, and the principal speakers will be Mr. R. M. Vick and Mr. W. H. Ogilvie for the motion, and Mr. V. Zachary Cope and Mr. R. J. McNeill Love against the motion. Members and associates of the Fellowship and their friends are invited to be present. On Tuesday, March 21st, at 8.30 P.M., Mr. R. Lindsay Rea will give a demonstration on the Fundus Oculi at the in-patient department of the West End Hospital for Nervous Diseases, Gloucester-gate, London, N.W. Forthcoming courses include a course on psychological medicine at the Maudsley Hospital, Denmark-hill, London, S.E., from March 14th to April 7th; a course in neurology at the West End Hospital for Nervous Diseases, 73, Welbeck-street, London, W., from March 13th to April 8th; and a course in proctology at the Gordon Hospital, Vauxhall Bridge-road, London, S.W., from March 20th to March 25th. Further particulars of the courses may be had from the secretary of the Fellowship, 1, Wimpole-street, London, W. 1.

NOTES, COMMENTS, AND ABSTRACTS

JOHN HUNTER: THE LANGUAGE OF FACTS

Sir CRISP ENGLISH, in delivering the Hunterian oration of the Hunterian Society, at the Mansion House last Monday, took as his title the Language of Facts, which he said was the great lesson of John Hunter's life. His letters to his friend Jenner illustrated his wide and insatiable interest in all living things. Every page of his life showed that he stood for science, truth, and reality. He had been the enemy of wild imagination and crude theory. His great work had been the discovery and collection of facts relating to medicine and surgery. He had initiated and handed on the language of facts.

Great advances had been made since Hunter's day, but a great field of research still awaited discovery. Research called for three groups of men, as Lord Balfour had pointed out: the research worker, the man who applied discovered facts where they were needed, and the man who used them for the benefit of mankind. Research workers must be men with open minds, acute imagination, and the habit of trying. John Hunter's were seldom born and never made. Medical research should be limited to the chase of facts which would help in the fight against disease. All workers should be kept in contact, and overlapping must be prevented. Research and clinical work must go hand in hand. Much greater facilities for post-graduate work would be demanded in the near future, for general practitioners found it extremely difficult to keep in touch with new advances.

Practitioners must weigh and face facts day by day, said Sir Crisp English, both for themselves and for their patients. The first step in a difficult case was to collect all available facts; the second was to draw deductions; and the third to express an opinion. This order should never be varied. Bluffing was no good in medicine. It was of vital importance all through to check the principles on which diagnosis was based and not to be led away by imagination, impressions, and the stories told by relations and friends. Facts must not be mixed with deductions. The people of this country showed an increasing tendency to ignore medical facts in favour of the phantasies of modern cults. Any new cure for cancer attracted a large crowd of adherents. These cults knew not the language of facts; they seldom kept records and seemed to know no failures. Argument was usually a waste of time, but if inevitable it should turn on the question of facts, first as to diagnosis and secondly as to cure.

The great work initiated by Hunter would never cease. "New" methods would soon be old, but the facts would survive and lead to yet more discoveries. There had been a wonderful accumulation in recent years of new facts leading to the cure of disease. It was largely John Hunter's language of facts that made the medical profession ring true.

In the subsequent discussion Sir WILLIAM WILLCOX remarked that in Hunter's time the opinion of a medical man of personality and power had been accepted without question, but now it had to be backed by laboratory investigations. One of the great charms of medicine to-day was that the clinical diagnosis could be criticised by the language of facts. In some countries hundreds of facts were collected before the physician attempted to make his diagnosis and he was apt to get lost among them, but the English physician owed his admitted supremacy in diagnosis to his habit of using his clinical sense first.

Mr. A. E. MORTIMER WOOLF said it was not always wise to use the language of facts. But the legend of Hunter's unpopularity with his colleagues was not altogether accurate; new evidence would shortly be available to show that Hunter had been much honoured and admired by his contemporaries. The extraordinary accuracy of his work in relation to the atmosphere of chicanery and quackery of the time was an astonishing thing.

Dr. J. CAMPBELL MCCLURE pointed out that many people were content to live on facts as they had been taught them and pose as the great apostles of the accepted doctrine. The great man regarded each fact as a stimulus to reach on to more, and as another small stone to set in the temple of knowledge—not as an achievement to himself.

METAL FITTINGS IN HOSPITALS

AMONG the many new materials made available for industrial purposes during the present century, metals, which within the memory of most middle-aged people were only chemical curiosities, and alloys in which they form essential constituents, occupy a prominent place. Aluminium, nickel, chromium, tantalum, tungsten, the strong light alloy duralumin, the non-rusting chromium steels, the highly magnetisable cobalt steels are outstanding examples. The demand for a high standard of cleanliness, with a minimal expenditure of labour in hospitals, has led to the utilisation of many of these new products. One of the newer alloys has a rather curious origin. Monel metal is an alloy containing about 60 per cent. of nickel, 33 per cent. of copper and iron, with small quantities of other metals to make up the remaining 7 per cent. As it is obtained by the unusual process of smelting a natural ore, its composition is variable, but only within small limits. Like most alloys containing much nickel it is white ("white gold" is a gold-nickel alloy), not easily tarnishable, and will stand the action of most of the liquids likely to be spilt upon it in a hospital ward. For instrument handles, furniture, utensils for ward and operating theatre, besides kitchen fittings, food trolleys, and sterilising apparatus it appears to be very suitable, possessing the advantage over aluminium, for some of these objects, of superior hardness and a nicer surface, whilst it is much more amenable to the ordinary methods of the metal worker than stainless steels. It appears from a still somewhat limited experience of its use to be a very satisfactory material. Chromium plating has achieved great popularity both in hospitals and homes for taps, towel rails, and such fixtures. It is necessary to impress on all who use it that gentle rubbing with a cloth is all the cleaning needed, as the coating of chromium is very thin and will retain its polish without the use of abrasive materials which will soon remove it. To be satisfactory, chromium should not be plated directly on steel, but fairly heavy layers of copper and nickel, or nickel alone, should first be plated and the nickel be highly polished before the final thin layer of chromium is applied. If this is not done the coating may be discontinuous and, under the influence of atmospheric corrosion affecting the under metal, the chromium will flake off. A case of this kind came under our notice some time ago, but the conditions for success are now well known. It is claimed that the chromaloid process is particularly suitable for the protection of car parts which not only have to stand all weathers, but are subject to much abrasion from grit in the air.

SECOND-HAND MEDICAL BOOKS

Menno Hertzberger, of the Internationaal Antiquariaat, Amsterdam, has issued a useful catalogue (No. 66) of "Books on the History of Medicine." This catalogue includes a few finely-printed books, but is chiefly valuable for the number of indispensable reference books listed in it, such as Chonlant's "Bibliographie der anatomischen Abbildung" or Osler's "Incunabula medica." There are also some important library catalogues and special bibliographies, besides a variety of reprints and facsimiles, as well as recent medico-historical works. The prices seem very reasonable. An attractive series of illustrated "Dance of Death" books includes a Paris-printed "Book of Hours" of 1502, priced at 375 guilders, several unusual seventeenth and eighteenth century editions, and a number of modern reproductions.

PHYSICAL THERAPY

A FASCINATING little work on the growth of the four sections of physical therapy, divided into massage and exercises, water, electricity, heat and light, has been issued as one of a series of primers on the history of medicine.[1] Dr. Coulter has delved into ancient as well as into modern writings. Sun worship and sun therapy is traced from the Chaldean and Egyptian times through the Greek and Roman to the Rollier Clinic at Leysin. The indications for massage and mobilisation are set out carefully by Hippocrates, and these measures were used extensively by Galen. In the seventeenth century Quellmaltz in Germany and Andry in France started work on orthopædic lines and included massage and movements in their teaching. All the older physicians seem to have attempted to apply vigorous exercises to the treatment of a variety of sedentary and plethoric ailments. Their patients must have been of hardier calibre than some of the nerve-strained patients who consult us nowadays. Occupational work and exercise seem to have been used in certain asylums in the late eighteenth century both in England and France.

The chapters on water and electricity yield many interesting sidelights on mediaeval and eighteenth century procedure. Dr. Coulter suggests that electricity, rescued from quacks, is capable of much development as a therapeutic agent, and he expresses astonishment at the contrast between the use to which it has been put in commerce and the slow development of its medical application.

THE "ELPEY" BANDAGE

WE have received specimens of a new type of surgical bandage now placed upon the market by the Liverpool Packings Company, Nottingham Buildings, 19, Brunswick-street, Liverpool. These bandages have new features which can be warmly commended. They are of the crepe type, and made of rubber, so that the bandage by its elasticity can conform to the shape of the limb, and being self-adjusting painful constriction is avoided if swelling occurs after bandaging. The porous nature of the material provides for ventilation, while a slightly corrugated surface, described by the manufacturers as "knurled," is an insurance against slipping. For this reason the dressing is maintained in position without any pressure on a painful or inflamed area. The bandages can be boiled or sterilised in the usual manner without damage. It is stated that the bandages have been tested by practitioners and at institutions with good results. The conditions for which they are obviously useful will be sprains, varicose veins, and, perhaps especially, the annoying recurrent œdema met with in limbs and around joints which have been encased for a long period in plaster. The bandages are supplied in three weights, light, heavy, and medium, and they can be made of any width.

THE CICELY NORTHCOTE TRUST

THIS fund was given to St. Thomas's Hospital in 1909 to complete the system of social work which had been begun in the casualty and out-patient departments of the hospital four years earlier. In addition to routine social work amongst patients in the wards, and the follow-up work resulting therefrom, the Trust was designed to act as a pioneer in experimental ventures of its kind. The twenty-third annual report of the Trust has recently been published, and like its predecessors is a record of fine social service. Of the follow-up work in cancer patients during the year it is stated that 1185 have been kept under observation, 196 assisted, 901 visited (in some cases many times), 101 provided with extra comforts and extra nourishment, and 28 sent to homes for the dying. The Northcote Trust Hostel has admitted 40 girls during the year. The social service department of a hospital becomes more highly specialised and technical each year. Plans for the after-care of patients have to be made with greater speed; more technical work is needed on behalf of patients in connexion with the insurance societies, the Road Traffic Act, and other measures, whilst certain special departments involve special efforts. For example, the work of the diabetic clinic would be unproductive if arrangements could not be made to enable the patient to pay for the diet recommended and for the insulin needed. Year by year the Cicely Northcote Trust meets the increasingly heavy burden placed upon it. This year it starts with a debit balance in spite of rigorous economy and active efforts to raise more money. Its record of work is so fine that a curtailment would be deplorable.

[1] Clio Medica. Physical Therapy. By John S. Coulter, M.D. New York: Paul B. Hoeber. 1932. Pp. 142. $1.50.

MALARIOTHERAPY IN GENERAL PARALYSIS

Two Japanese workers, I. Omaru and H. Eguchi,[1] report the results of the treatment of 260 cases of general paralysis of the insane with tertian malaria. They claim 40 per cent. of complete remissions, 15 per cent. of incomplete remissions, 18 per cent. unchanged, and 8 per cent. modification in the clinical picture; the remainder of the patients died. The prospect of remission, they find, is good in the neurasthenic and expansive forms, but bad in the demented and depressive forms. The prognosis is favourable in the forms resembling manic-depressive psychosis, but unfavourable in those resembling schizophrenia, except the katatonic type. They found that patients of the pyknic physical type responded better than others. Research into 111 cases showed no special relationship between the blood picture and the clinical result. The Wassermann reaction in 30 cases was tested over a year, but there appeared to be no connexion between the blood picture and the disappearance of a positive result.

[1] Fukuoka Acta Med., December, 1932, p. 168.

Births, Marriages, and Deaths

BIRTHS

CAIRNS.—On Feb. 21st, at St. John's Wood Park, N.W., the wife of Hugh Cairns, F.R.C.S., of a daughter.

GIBBERD.—On Feb. 21st, at Welbeck-street, W., the wife of G. F. Gibberd, F.R.C.S., of a son.

MARRIAGES

CHARLTON—SMITH.—On Feb. 22nd, at Hampstead, P. H. Charlton, M.B., to Margaret, only daughter of Mr. and Mrs. H. N. Smith.

CORR—BROWN.—On Feb. 22nd, at St. James's Church, Spanish-place, W., Dr. J. Patrick Corr, to Phyllis E. L. Brown, both of Brighton.

FERGUSON—WILSON.—On Feb. 21st, at the Parish Church, Chapel-en-le-Frith, by the Vicar, Rev. W. H. Green, Dr. Fergus R. Ferguson to Dr. Kathleen Wilson.

SMITH—STEWART.—On Feb. 18th, at St. Stephen's Church, Dulwich, K. P. Smith, L.D.S., R.C.S., of Alleyne, Petts Wood, to Beth, youngest daughter of Dr. and Mrs. H. M. Stewart, Dyffryn, Dulwich.

WARD-FARMER—CATCHPOLE.—On Feb. 21st, at St. George's Church, Portsmouth, Dr. Paul Ward-Farmer, M.B., M.R.C.P., to Sybil Ethel, the only daughter of Lieut.-Commander and Mrs. T. J. Catchpole, of The Hard, Portsmouth.

DEATHS

BALLANCE.—On Feb. 20th, 1933, at Westfield, Hatfield, Hertfordshire, Alaric Charles Ballance, M.A., M.B., B.Ch. Oxon., dearly loved husband of May Ballance, née Trowel, and only son of Sir Charles and the late Lady Ballance, aged 45.

BULL.—On Feb. 24th, at Clarges-street, London, William Charles Bull, F.R.C.S., in his 75th year.

GALLWEY.—On Feb. 25th, at his home in London, Major-General Sir Thomas Joseph Gallwey, K.C.M.G., C.B., late Colonel Commandant R.A.M.C., in his 81st year.

GRIFFITHS.—On Feb. 25th, S. J. H. Griffiths, F.R.C.S., aged 34, 6, Lansdown-place, Clifton, Bristol, dearly loved son of Mr. and Mrs. E. S. Griffiths, of Fairlawn, Portishead, Som.

JOHNSTON.—On Feb. 19th, suddenly, at Esslemont-road, Edinburgh, George Minto Johnston, M.D., F.R.C.P.E., J.P., in his 76th year.

MANN.—On Feb. 25th, at Revesby, Lincolnshire, Frederick William Slingsby Mann, M.R.C.S., aged 61.

MARSH.—On Feb. 26th, at Chelmsford, suddenly, Philip Henry Marsh, L.D.S., R.C.S. Eng., of Branwoods, Great Baddow, and Dorset House, Chelmsford.

O'DONOVAN.—On Feb. 26th, at "Milthorp," Cathedral-road, Cardiff, Marshall John Perrott O'Donovan, L.R.C.S. (I.), L.K.Q.C.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths